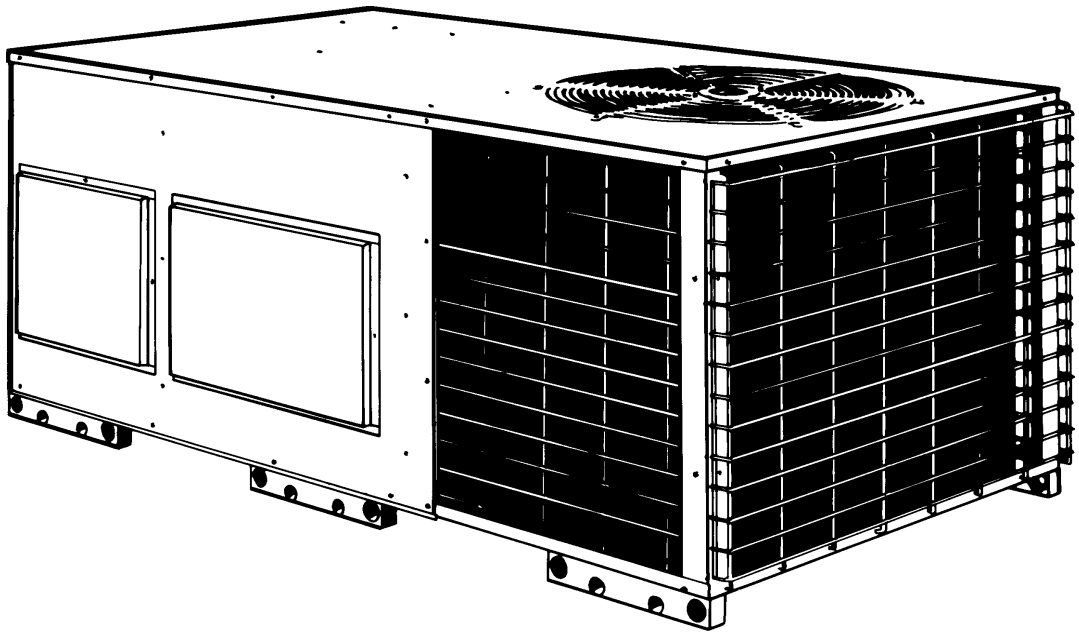
PACKAGE COOLING, PACKAGE HEAT PUMP & PACKAGE GAS UNITS



SERVICE INSTRUCTIONS

AMANA REFRIGERATION, INC., AMANA, IOWA 52204

MANUFACTURING NUMBERS
COVERED IN THIS MANUAL

SEE MODEL AND MANUFACTURING NUMBERS ON PAGE 3.

A Raytheon Company

August 1995 PRINTED IN THE U.S.A. PART NO. RS6300001
Rev. 1

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This manual replaces R0214301. Please discard and replace with this manual.

IMPORTANT INFORMATION

Pride and workmanship go into every product to provide our customers with quality products. It is possible, however, that during its lifetime a product may require service. Products should be serviced only by a qualified service technician who is familiar with the safety procedures required in the repair and who is equipped with the proper tools, parts, testing instruments and the appropriate service manual. **REVIEW ALL SERVICE INFORMATION IN THE APPROPRIATE SERVICE MANUAL BEFORE BEGINNING REPAIRS.**

IMPORTANT NOTICES

⚠ WARNING **IF REPAIRS ARE ATTEMPTED BY UNQUALIFIED PERSONS, DANGEROUS CONDITIONS (SUCH AS EXPOSURE TO ELECTRICAL SHOCK) MAY RESULT. THIS MAY CAUSE SERIOUS INJURY OR DEATH.**

⚠ CAUTION **AMANA WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SERVICE OR SERVICE PROCEDURES. IF YOU PERFORM SERVICE ON YOUR OWN PRODUCT, YOU ASSUME RESPONSIBILITY FOR ANY PERSONAL INJURY OR PROPERTY DAMAGE WHICH MAY RESULT.**

To locate an authorized servicer, please consult your telephone book or the dealer from whom you purchased this product. For further assistance, please contact:

CONSUMER AFFAIRS DEPT. AMANA REFRIGERATION, INC. AMANA, IOWA 52204	**OR** **CALL**	1-319-622-5511 and ask for Consumer Affairs

If outside the United States contact:

AMANA REFRIGERATION, INC.
ATTN: INTERNATIONAL DIVISION
AMANA, IOWA 52204, USA
Telephone: (319) 622-5511
Facsimile: (319) 622-2180

RECOGNIZE SAFETY SYMBOLS, WORDS AND LABELS

⚠ DANGER **DANGER -** Immediate hazards which **WILL** result in severe personal injury or death.

⚠ WARNING **WARNING -** Hazards or unsafe practices which **COULD** result in severe personal injury or death.

⚠ CAUTION **CAUTION -** Hazards or unsafe practices which **COULD** result in minor personal injury or product or property damage.

IMPORTANT INFORMATION

⚠ WARNING

SYSTEM CONTAMINANTS, IMPROPER SERVICE PROCEDURE AND/OR PHYSICAL ABUSE AFFECTING HERMETIC COMPRESSOR ELECTRICAL TERMINALS MAY CAUSE DANGEROUS SYSTEM VENTING.

System contaminants, improper Service Procedure and/or physical abuse affecting hermetic compressor electrical terminals may cause dangerous system venting.

The successful development of hermetically sealed refrigeration compressors has completely sealed the compressor's moving parts and electric motor inside a common housing, minimizing refrigerant leaks and the hazards sometimes associated with moving belts, pulleys, or couplings.

Fundamental to the design of hermetic compressors is a method whereby electrical current is transmitted to the compressor motor through terminal conductors which pass through the compressor housing wall. These terminals are sealed in a dielectric material which insulates them from the housing and maintains the pressure tight integrity of the hermetic compressor. The terminals and their dielectric embedment are strongly constructed, but are vulnerable to careless compressor installation or maintenance procedures and equally vulnerable to internal electrical short circuits caused by excessive system contaminants.

In either of these instances, an electrical short between the terminal and the compressor housing may result in the loss of integrity between the terminal and its dielectric embedment. This loss may cause the terminals to be expelled, thereby venting the vaporous and liquid contents of the compressor housing and system.

A venting compressor terminal normally presents no danger to anyone providing the terminal protective cover is properly in place.

If, however, the terminal protective cover is not properly in place, a venting terminal may discharge a combination of

(a) hot lubricating oil and refrigerant

(b) flammable mixture (if system is contaminated with air)

in a stream of spray which may be dangerous to anyone in the vicinity. Death or serious bodily injury could occur.

Under no circumstances is a hermetic compressor to be electrically energized and/or operated without having the terminal protective cover properly in place.

See Service Section S-17 for proper servicing.

PRODUCT IDENTIFICATION

The model and manuacturing number are used for positive identification of component parts used in manufacturing. At which time engineering and manufacturing changes take place where interchangeability of components are affected, the manufacturing number will change.

It is very important to use the model and manufacturing numbers at all times when requesting service or parts information.

MODEL	M/N	MODEL	M/N	MODEL	M/N
SPCO24001A	P9999101C	SPCO42001A	P9999105C	SPCO60001A	P9999109C
SPCO30001A	P9999102C	SPCO42003A	P9999106C	SPCO60003A	P9999110C
SPCO36001A	P9999103C	SPCO48001A	P9999107C		
SPCO36003A	P9999104C	SPCO48003A	P9999108C		
PCA24B0002A	P1153601C	PCA42B0002A	P1153701C	PCA48B0004A	P1153709C
PCA24B0002C	P1175701C	PCA42B0002C	P1175706C	PCA48B0004C	P1175710C
PCA30B0002A	P1153602C	PCA42B0003A	P1153702C	PCA60B0002A	P1153705C
PCA30B0002C	P1175702C	PCA42B0003C	P1175707C	PCA60B0002C	P1175711C
PCA36B0002A	P1153603C	PCA48B0002A	P1153703C	PCA60B0003A	P1153706C
PCA36B0002B	P1153606C	PCA48B0002B	P1153707C	PCA60B0003C	P1175712C
PCA36B0002C	P1175703C	PCA48B0002C	P1175708C	PCA60B0004A	P1153710C
PCA36B0003A	P1153604C	PCA48B0003A	P1153704C	PCA60B0004C	P1175713C
PCA36B0003C	P1175704C	PCA48B0003B	P1153708C		
PCA36B0004A	P1153605C	PCA48B0003C	P1175709C		
PCA36B0004C	P1175705C				
PCB24A0002A	P1152201C	PCB36A0002A	P1152203C	PCB48B0002A	P1152303C
PCB24B0002A	P1152204C	PCB36B0002A	P1152206C	PCB48B0002C	P1175805C
PCB24B0002C	P1175801C	PCB36B0002C	P1175803C	PCB60B0002A	P1152305C
PCB30A0002A	P1152202C	PCB42A0002A	P1152301C	PCB60B0002C	P1175806C
PCB30B0002A	P1152205C	PCB42B0002A	P1152302C		
PCB30B0002C	P1175802C	PCB42B0002C	P1175804C		
SPHO24001A	P9999201C	PHA24B0002A	P1153801C	PHA42B0003C	P1175906C
SPHO30001A	P9999202C	PHA24B0002C	P1175901C	PHA48B0002A	P1153903C
SPHO36001A	P9999203C	PHA30B0002A	P1153802C	PHA48B0002C	P1175907C
SPHO36003A	P9999204C	PHA30B0002C	P1175902C	PHA48B0003A	P1153904C
SPHO42001A	P9999205C	PHA36B0002A	P1153803C	PHA48B0003C	P1175908C
SPHO42003A	P9999206C	PHA36B0002C	P1175903C	PHA60B0002A	P1153905C
SPHO48001A	P9999207C	PHA36B0003A	P1153804C	PHA60B0002B	P1153907C
SPHO48003A	P9999208C	PHA36B0003C	P1175904C	PHA60B0002C	P1175909C
SPHO60001A	P9999209C	PHA42B0002A	P1153901C	PHA60B0003A	P1153906C
SPHO60003A	P9999210C	PHA42B0002C	P1175905C	PHA60B0003B	P1153908C
		PHA42B0003A	P1153902C	PHA60B0003C	P1175910C
FADM3A	P9851001C	LOK501A	P6484101C	PRC3A	P9850401C
FADM5A	P9851002C			PRC5A	P9850402C
		PECE3A	P9850501C		
FADS3A	P9850701C	PECE3B	P9850503C		
FADS5A	P9850702C	PECE5A	P9850502C		
PHK05A1	P1153207C	PHK15A1	P1153203C	PHK25A1	P1153205C
PHK05C1	P1153201C	PHK15A3	P1153209C	PHK25A3	P1153211C
PHK10A1	P1153202C	PHK15A4	P1175601C	PHK30A1	P1153206C
PHK10A3	P1153208C	PHK20A1	P1153204C	PHK30A3	P1153212C
		PHK20A3	P1153210C	PHK30A4	P1175602C

PRODUCT IDENTIFICATION

MODEL	M/N	M/N
SPCG240451A	P9999301C	P1105901C
SPCG240701A	P9999302C	P1105902C
SPCG240901A	P9999303C	P1105903C
SPCG300451A	P9999304C	P1105904C
SPCG300701A	P9999305C	P1105905C
SPCG300901A	P9999306C	P1105906C
SPCG360451A	P9999307C	P1105907C
SPCG360453A	P9999308C	P1105908C
SPCG360701A	P9999309C	P1105909C
SPCG360703A	P9999310C	P1105910C
SPCG360901A	P9999311C	P1105911C
SPCG360903A	P9999312C	P1105912C
SPCG420901A	P9999401C	P1106001C
SPCG420903A	P9999402C	P1106002C
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PGA24B0452C	P1183401C	
PGA24B0702A	P1154002C	P1164602C
PGA24B0702C	P1183402C	
PGA24B0902A	P1154003C	P1164603C
PGA24B0902C	P1183403C	
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PGA30B0702A	P1154005C	P1164605C
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PGA30B0902A	P1154006C	P1164606C
PGA30B0902C	P1183406C	
PGA36B0452A	P1154007C	P1164607C
PGA36B0452B	P1164615C	
PGA36B0452C	P1183407C	
PGA36B0453A	P1154008C	P1164608C
PGA36B0453C	P1183408C	
PGA36B0702A	P1154009C	P1164609C
PGA36B0702B		P1164616C
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PGA36B0703A	P1154010C	P1164610C
PGA36B0703C	P1183410C	
PGA36B0704A		P1164613C
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PGA36B0902A	P1154011C	P1164611C
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MODEL	M/N	M/N
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SPCG421153A	P9999404C	P1106004C
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SPCG481351A	P9999411C	P1106009C
SPCG481353A	P9999412C	P1106010C
SPCG600901A	P9999413C	P1107101C
SPCG600903A	P9999414C	P1107102C
SPCG601151A	P9999415C	P1107103C
SPCG601153A	P9999416C	P1107104C
SPCG601351A	P9999417C	P1107105C
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PGA48B0904A	P1154117C	
PGA48B0904C	P1176007C	
PGA48B1152A	P1154107C	
PGA48B1152B	P1154113C	
PGA48B1152C	P1176008C	
PGA48B1153A	P1154108C	
PGA48B1153B	P1154114C	
PGA48B1153C	P1176009C	
PGA48B1352A	P1154109C	
PGA48B1352B	P1154115C	
PGA48B1352C	P1176010C	
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PGA48B1353B	P1154116C	
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PGA48B1354C	P1176012C	
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PGA60B1152A	P1154203C	
PGA60B1152C	P1176103C	
PGA60B1153A	P1154204C	
PGA60B1153C	P1176104C	
PGA60B1154A	P1154207C	
PGA60B1154C	P1176105C	
PGA60B1352A	P1154205C	
PGA60B1352C	P1176106C	
PGA60B1353A	P1154206C	
PGA60B1353C	P1176107C	
PGA60B1354A	P1154208C	
PGA60B1354C	P1176108C	

PRODUCT IDENTIFICATION

MODEL	M/N
PGB24A0452A	P1152401C
PGB24A0702A	P1152402C
PGB24A0902A	P1152403C
PGB24B0452A	P1154301C
PGB24B0452A	P1164701C
PGB24B0452C	P1176201C
PGB24B0702A	P1154302C
PGB24B0702A	P1164702C
PGB24B0702C	P1176202C
PGB24B0902A	P1154303C
PGB24B0902A	P1164703C
PGB24B0902C	P1176203C
PGB30A0452A	P1152404C
PGB30A0702A	P1152405C
PGB30A0902A	P1152406C
PGB30B0452A	P1154304C
PGB30B0452A	P1164704C
PGB30B0452C	P1176204C
PGB30B0702A	P1154305C
PGB30B0702A	P1164705C
PGB30B0702C	P1176205C
PGB30B0902A	P1154306C
PGB30B0902A	P1164706C
PGB30B0902C	P1176206C
PGB36A0452A	P1152407C
PGB36A0702A	P1152408C
PGB36A0902A	P1152409C
PGB36B0452A	P1154307C
PGB36B0452A	P1164707C
PGB36B0452C	P1176207C
PGB36B0702A	P1154308C
PGB36B0702A	P1164708C
PGB36B0702C	P1176208C
PGB36B0902A	P1154309C
PGB36B0902A	P1164709C
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PGB42A0902A	P1152501C
PGB42A1152A	P1152502C
PGB42B0902A	P1152503C
PGB42B0902C	P1183301C
PGB42B1152A	P1152504C
PGB42B1152C	P1183302C
PGB48B0902A	P1152505C
PGB48B0902C	P1183303C
PGB48B1152A	P1152507C
PGB48B1152C	P1183304C
PGB48B1352A	P1152509C
PGB48B1352C	P1183305C
PGB60B0902A	P1155801C
PGB60B0902C	P1183306C
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PGB60B1152C	P1183307C
PGB60B1352A	P1155805C
PGB60B1352C	P1183308C

PGC24B0452A	P1205401C
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PGC30B0702A	P1205403C
PGC36B0702A	P1205404C
PGC36B0902A	P1205405C
PGC42B0902A	P1205406C
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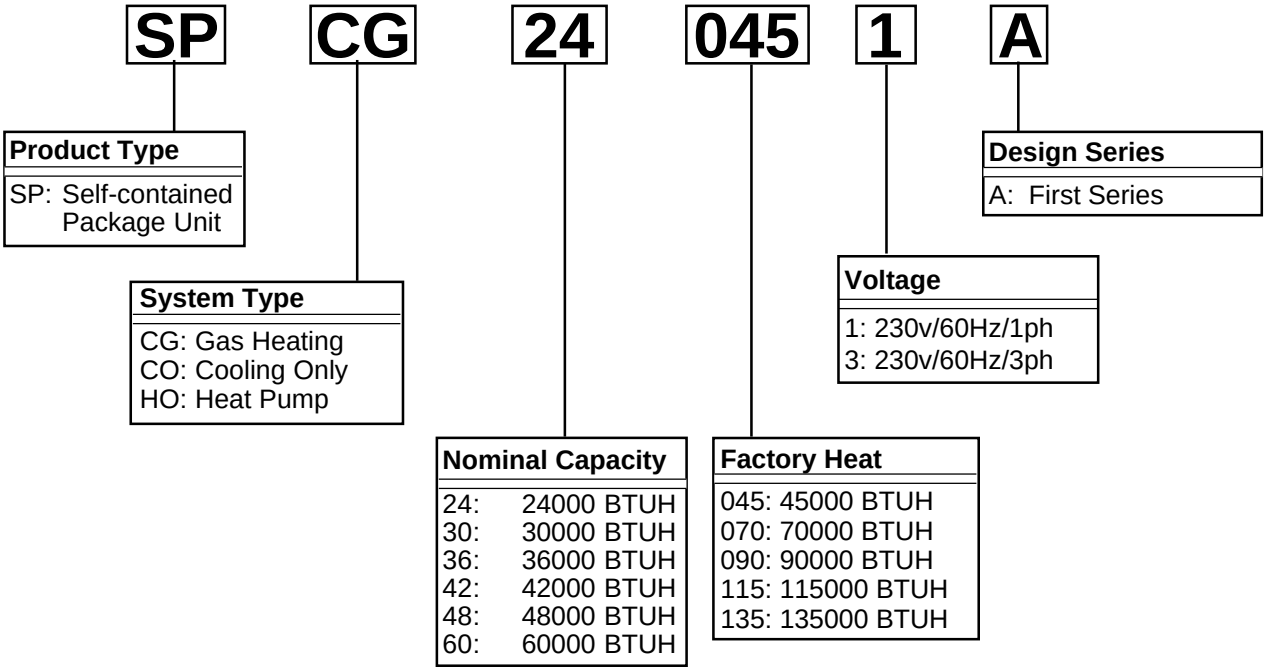
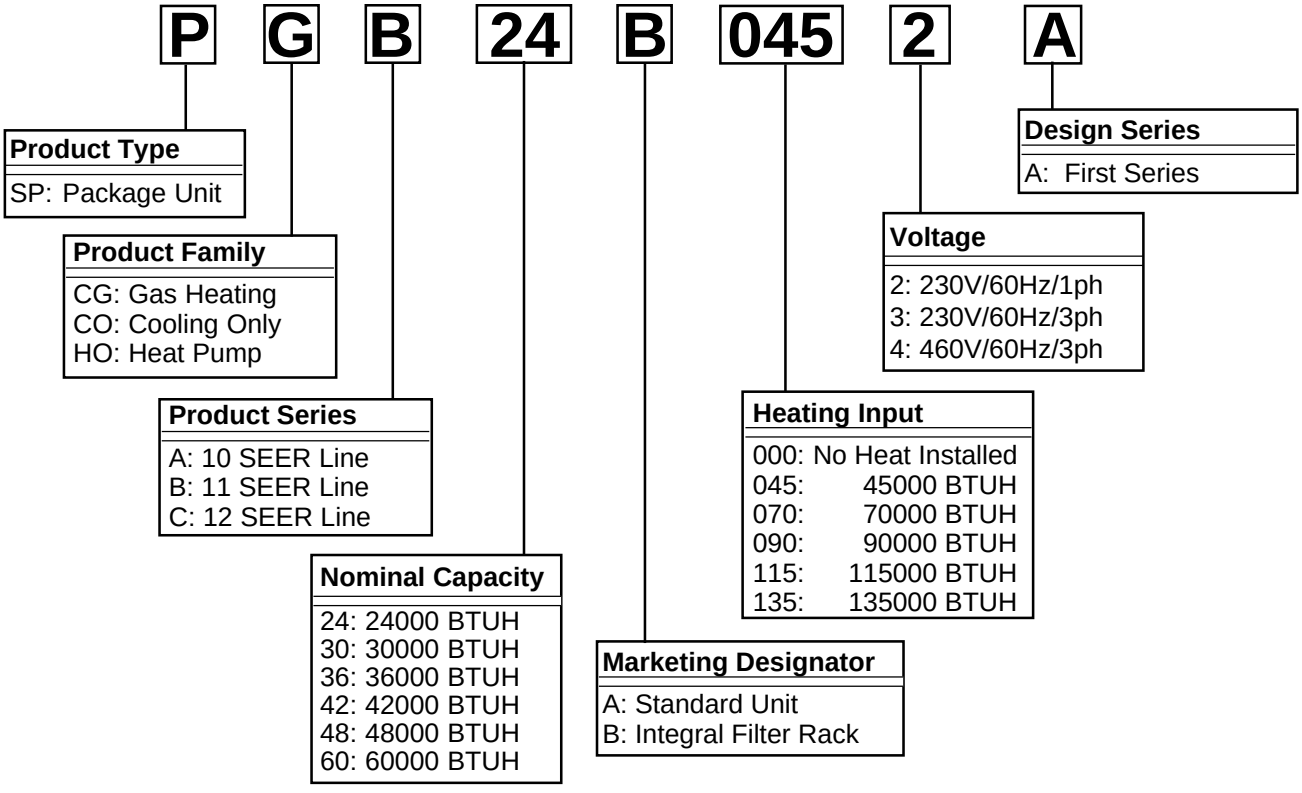
PRODUCT IDENTIFICATION





PRODUCT IDENTIFICATION

Additional Amana accessories, as described below, can be purchased to fit specific application needs. Accessories can be ordered by the following part numbers and each accessory includes its own separate instructions.

ACCESSORY	PART NUMBER	DESCRIPTION
Duct Transition Round	PDTR3A P9850901C (24-36) PDTR5A P9850902C (42-60)	Converts existing rectangular duct connections to round. Useful for both vertical (w/PRC roofcurb) and horizontal air flow applications.
Duct Transition Over/Under	PDTR0U3A P9850601C (24-36) PDTR0U5A P9850601C (42-60)	Converts existing side by side duct connections to over & under ductwork. (For replacement purposes). Amana's preceding units had over & under ductwork.
Rooftop Curb	PRC3A P9850401C (24-36) PRC5A P9850402C (42-60)	Installed when package unit is put on roof. Ductwork and electrical connections can be made through curb.
Downflow Economizer	PECE3A P9850501C (24-36) PECE5A P9850502C (42-60)	Reduces the amount of time the compressor operates. If the outdoor air can provide the desired amount of cooling, the outdoor air damper will open. If the outdoor air gets too humid, the enthalapy control detects the condition and automatically closes the outdoor air damper, opens the return air damper, and switches to compressor operation.
Fresh Air Intake	FADS3A P9850701C (24-36) FADS5A P9850702C (42-60)	Allows up to 25% fresh air intake into the existing building. Includes a damper which must be adjusted manually to the desired fresh air intake.
Fresh Air Intake Motorized	FADM3A P9851001C (24-36) FADM5A P9851002C (42-60)	Allows up to 25% fresh air intake into the existing building. Damper automatically opens when the indoor fan is running and returns to fully closed position when unit is off.
Barometric Relief Hood	PRAH5A P9850801C (ALL)	Relieves excessive building pressure. Use with PECE economizer.
50°F Compressor Lockout	LOK501A P6484101C (ALL)	Prevents mechanical cooling at ambients below 50°F.
Ambient Thermostat Kit	ATK01 P1130001C ATK04 P1130002C ATK05 P6443902C ATK06 P6443903C	These kits control the stages of electric heat and allow a stage to be energized only when a set outdoor temperature is reached. This will allow the system's heat output to more closely match the building's load.
Emergency Heat Relay	EMHK01 P6454101C (24-42) EMHK02 P6454102C (48-60)	Allows use of emergency heat indoor thermostat and the ability to lock out the compressor and bypass the outdoor thermostats and turn on all electric heat.
Circuit Breaker Kits	PCBK101 P6472701C PCBK102 P6472702C PCBK103 P6472703C PCBK104 P6472704C PCBK105 P6472707C PCBK106 P6472708C PCBK301 P6472705C PCBK302 P6472706C PCBK303 P6472709C	30 Amp 1ph 40 Amp 1ph 50 Amp 1ph 60 Amp 1ph 25 Amp 1ph 35 Amp 1ph 25 Amp 3ph 40 Amp 3ph 30 Amp 3ph These Circuit Breakers are used in conjunction with electric heater kits and provide branch circuit protection for the unit See the Electric Heaters installation instructions for proper sizing.
Electric Heater Kits	PHK105 P9828101C PHK05A1 P1153207C* PHK105CP9828102C PHK05C1 P1153201C* PHK110 P9828201C PHK10A1 P1153202C* PHK310 P9828202C PHK10A3 P1153208C* PHK115 P9828301C PHK15A1 P1153203C* PHK315 P9828302C PHK15A3 P1153209C* PHK15A4 P1175601C* PHK120 P9828401C PHK20A1 P1153204C* PHK320 P9828402C PHK20A3 P1153210C* PHK125 P9829701C PHK25A1 P1153205C* PHK325 P9829702C PHK25A3 P1153211C* PHK130 P9829801C PHK30A1 P1153206C* PHK330 P9829802C PHK30A3 P1153212C* PHK30A4 P1175602C*	4.8KW 1ph or 3ph 4.8KW 1ph - 30 Amp Circuit Breaker 9.6KW 1ph - 50 Amp Circuit Breaker 9.6KW 3ph - 45 Amp Circuit Breaker 14.4KW 1ph - 30 & 50 Amp Circuit Breakers 14.4KW 3ph - 45 Amp Circuit Breaker 14.4KW 3ph - 3-60 Amp Fuses 19.2KW 1ph - 2-50 Amp Circuit Breakers 19.2KW 3ph - 30 & 45 Amp Circuit Breakers 24.0KW 1ph - 30 & 2-50 Amp Circuit Breakers 24.0KW 3ph - 2-45 Amp Circuit Breakers 28.8KW 1ph - 3-50 Amp Circuit Breakers 28.8KW 3ph - 2-45 Amp Circuit Breakers 28.8KW 3ph - 3-60 Amp Fuses

* Blower Speed Relay not included with heater kit.

AGA

AMANA REFRIGERATION INC.
AMANA, IOWA, USA

FOR PARTS AND SERVICE GIVE MODEL, SERIAL, AND MFG NO.

MODEL NO: PGA24B0452A
MFG NO: P1154001R
SERIAL NO: -0-

CGA

221.476-1989 CENTRAL FURNACE

TYPE OF GAS / TYPE DE GAZ: NAT

INPUT BTUH	OUTPUT CAP ✪	MAN PRESS. IN W.C.
45000	3500	3.5

✪ AMANA RATINGS BASED ON D.O.E. PROCEDURES

TEMPERATURE RISE / ELEVATION DE TEMPERATURE: 20 °F TO A 50 °F

DESIGNED MAXIMUM OUTLET AIR TEMPERATURE / TEMPERATURE MAXIMALE D'AIRE DE SORTIE PREVUE: 155 °F

MAXIMUM EXTERNAL STATIC PRESSURE / PRESSION STATIQUE EXTERENE MAXIMALE: 45 IN W.C. / PO. DE C.D'E

CANADIAN INSTALLATIONS ONLY

	INPUT BTUH CAPACITE* D'ALIMENTATION	OUTPUT CAP CAPACITE* DE DEBIT	ORIFICE INJECTEUR	MAN PRESS. IN W.C. PRESS DANZ LECOLECTEUR
0-2000 FT	45000	36450	43	4.2
0-4500 FT	40500	32400	43	3.5

* EN UNITES THERMALES BRITANNIQUES/HR
FOR OPERATION IN AMBIENT TEMPERATURES DOWN TO -40°F. POUR FUNCTIONNEMENT A DES TEMPERATURES AMBIANTESJUSQU'A -40°F.

NAT GAS MAX LINE PRESS 10.0 IN. W.C.
NAT GAS MIN LINE PRESS FOR PURPOSES OF INPUT ADJUSTMENT 5.0 IN. W.C.
LPG GAS MAX LINE PRESS 14.0 IN. W.C.
LPG GAS MIN LINE PRESS FOR PURPOSES OF INPUT ADJUSTMENT 11.0 IN. W.C.

PRESS MAX DU GAZ NAT DANS LE TUYAU 10.0 IN. W.C.
PRESS MIN DU GAZ NAT DANS LE TUYAU 5.0 IN. W.C.
PRESS MAX DU GAZ LIQ DANS LE TUYAU 14.0 IN. W.C.
PRESS MIN DU GAZ LIQ DANS LE TUYAU 11.0 IN. W.C.

COMPRESSOR	1405	RLA	4.0	LRA	1	PH
COND. MOTOR	0.8	FLA	1/8	HP	1	PH
EVAP. MOTOR	2.7	FLA	1/3	HP	1	PH
COMB. MOTOR	50	FLA	1/3	HP	1	PH

230/208 VOLTS 197 MIN VOLTS 60 HZ 1 PHASE

2.5 AMP. MAX. OVERCURRENT PROTECTION DEVICE

17.9 MIN. CIRCUIT AMPACITY

64.0 OZ. R-22 FACTORY CHARGED TEST PRESSURE. P.S.I.G. 300 H.S. 150 L.S.

MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS

TOP UNOBSTRUCTED 48 TO 36" OVERHANG PERMITTED
REAR 12"; LEFT SIDE 24"; RIGHT SIDE 6"

HORIZONTAL OUTLET CONNECTED
FOR USE ON COMBUSTIBLE FLOORS OR CLASS A,B OR C ROOF COVERING MATERIAL.

DOWNFLOW OUTLET CONNECTED
INSTALLATION ON NON COMBUSTIBLE FLOORS ONLY. FOR INSTALLATION ON COMBUSTIBLE FLOORING OR A CLASS A,B OR C ROOFING MATERIAL ONLY WHEN INSTALLED ON SPECIAL BASE PART NO. PRC3A

FOR SERVICEABILITY A MINIMUM CLEARANCE OF 36" REQUIRED IN THE FRONT.

THIS FURNACE MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND LOCAL CODES. IN THE ABSENCE OF LOCAL CODES FOLLOW THE NATIONAL GAS FUEL CODE ANSI Z223.1 [ ] OR NATIONAL STANDARDS OF CANADA CAN/CGA-B149-1 OR 2.

FORCED AIR FURNACE WITH COOLING UNIT FOR OUTDOOR INSTALLATION ONLY.

LES DISTANCES MIN JUSOU AUX MALIERES INFLAMIMABLES

PAS D'EN COMBREMENT SUR LE DESSUS SURPLOMB PERMIS 48" TO 36"
ARRIERE 12"; DROIT COTES 24"; GAUCHE COTES 6"

PRISE HORIZONTALE BRANCHEE
POUR INSTALLATION SUR PLANCHER COMBUSTIBLE OU MATERUAUX POUR COUVRIR TOITURE DE CLASSE A,B OU C.

PRISE DE DESCENTE BRANCHEE
POUR INSTALLATION SUR PLANCHER INCOMBUSTIBLE SEULEMENT.
POUR INSTALLATION SUR PLANCHER COMBUSTIBLE SEULEMENT SI L'APPAREIL MATERUAX POUR COUVRIR TOITURE DE CLASSE A,B OU C EST INSTALLE SUR UNE BASE SPECIALE NO. PRC3A

IL EST NECESSAIRE DE LAISSER UN ESPACE LIBRE DE 36". A L'AVANT DE L'APPAREIL EN CAS DE REPARATIONS.

CETTE CHAUDIERE A AIR PULSE DOIT ETRE INSTALLEE CONFORMEMENT AUX SPECIFICATIONS DU FABRICANT ET CELLES. DES CODES EN VIGUEUR AU LIEU DE L'INSTALLATION. EN ABSENCE DES CODES LOCAUX SUIVRE CAN/CGA B-149.

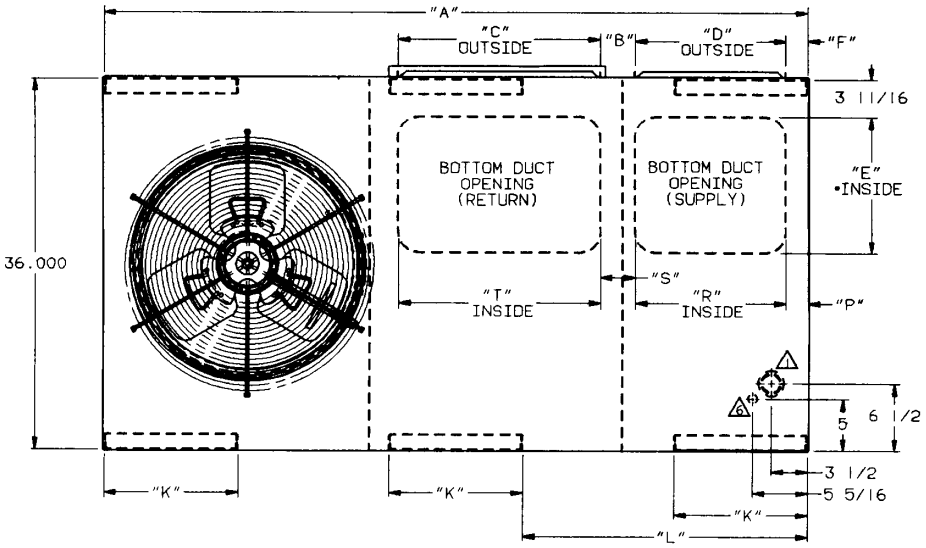
GENERATEUR D'AIR CHAUD CIRCULATION FORCEE AVEC UNITE DE REFOIDISSEMENT POUR INSTALLATION A L'EXTERIEUR SEULEMENT.

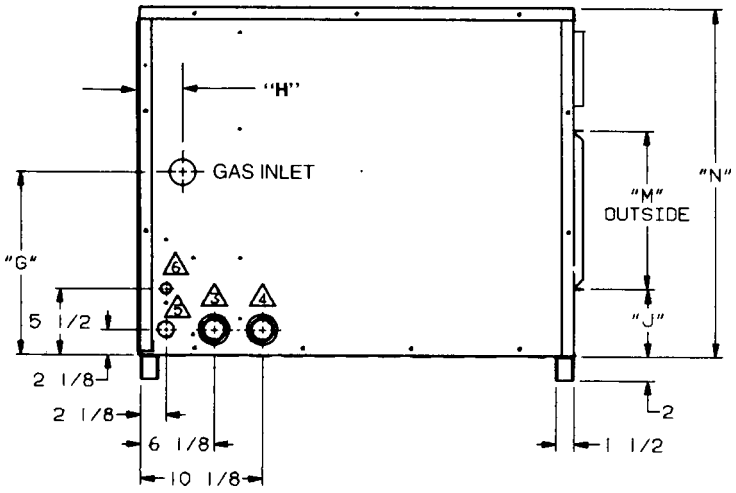
[ ]

D98828

PRODUCT IDENTIFICATION

PRODUCT IDENTIFICATION

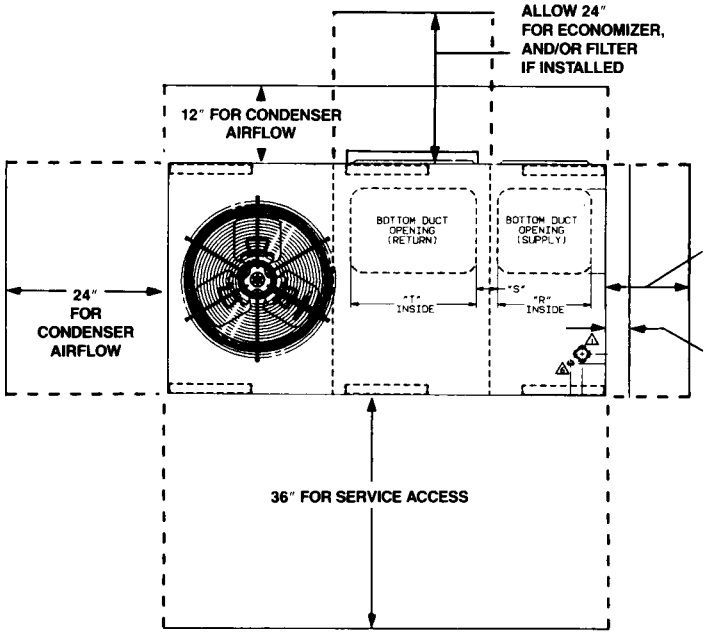


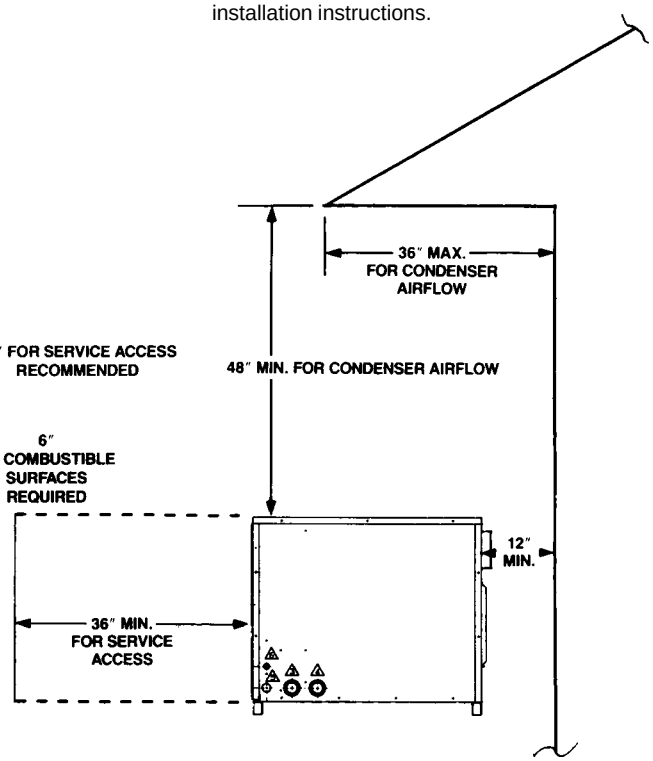


Dimension	Unit Size	
	24,30,36	42,48,60
A (Length)	68 5/16"	81 1/2"
B	3 5/16"	3 9/16"
C	19 11/16"	22 11/16"
D	14 11/16"	17 11/16"
E	13 1/8" *	17 1/8" *
F	2 3/16"	3 7/16"
G	15 3/16"	21 7/16"
H	2 1/8"	2 1/8"
J	5 9/16"	8 9/16"
K	13"	13"
L	27 11/16"	34 1/4"
M	13 3/16"	17 3/16"
N (Height w/o Rails)	28 13/16"	35 1/16"
P	2 3/16"	3 7/16"
R	14 5/8" *	17 5/8" *
S	3 3/8"	3 11/16"
T	16 5/8" *	22 5/8" *

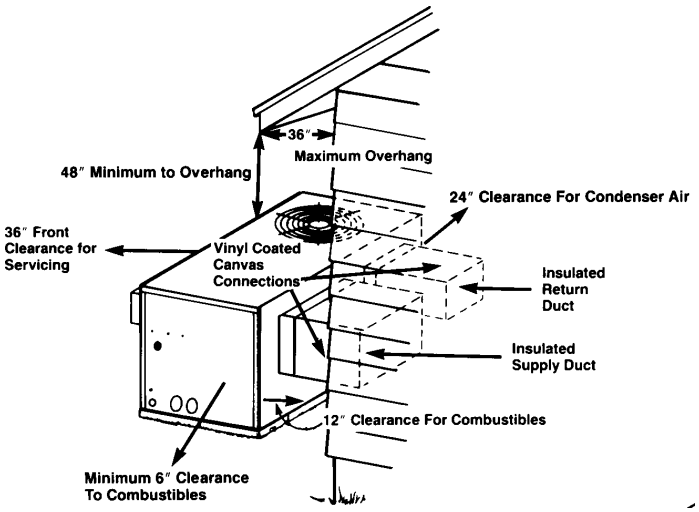
KNOCKOUT GROMMET DIMENSIONS		
Knockouts	Trade Size Conduit	Voltage
1	1 1/4", 1 1/2", 2"	Line
2	Not Used	NA
3	1 1/4", 1 1/2", 2"	Line
4	1 1/4", 1 1/2", 2"	Line
5	1"	Line
6	1/2"	Low

NOTE: Bottom duct openings have rounded rather than square openings. If using bottom discharge, ductwork should be attached to the curb prior to installing the unit. Ductwork dimensions are shown in Amana roof curb installation instructions.



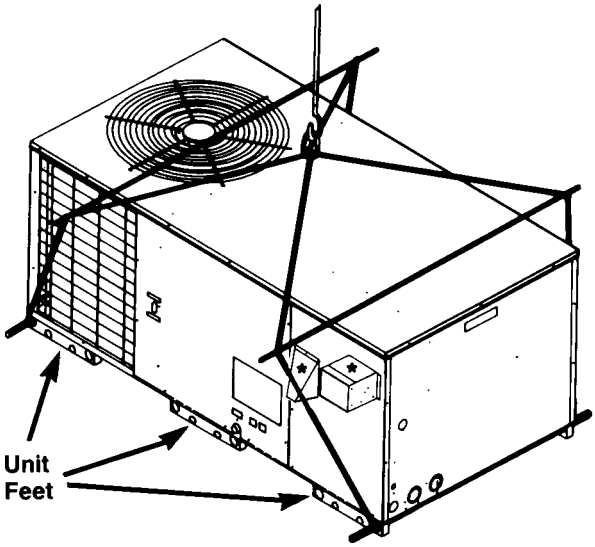


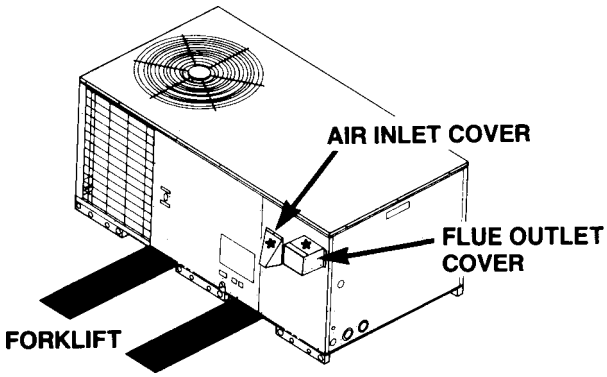
PRODUCT IDENTIFICATION



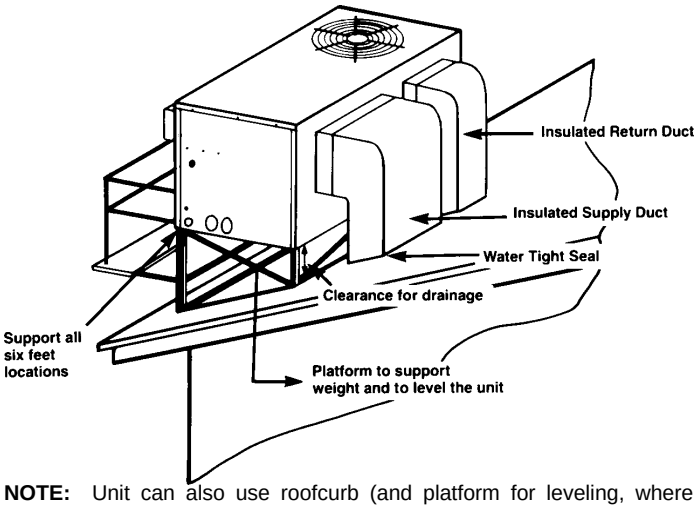
12" Clearance For Servicing Recommended

Platform for service person with rails or guards in accordance with local codes or ordiances or in their absence with the latest edition of the National Fuel Gas Code ANSIZ223.1.





*Flue outlet hood and air inlet hood are packaged separately inside the unit and must be installed prior to operation. See Page -- for installation procedures.


Insulated Return Duct
Insulated Supply Duct
Water Tight Seal
Clearance for drainage
Support all six feet locations
Platform to support weight and to level the unit

NOTE: Unit can also use roofcurb (and platform for leveling, where necessary) to utilize bottom discharge.

⚠ WARNING

TO PREVENT POSSIBLE PROPERTY DAMAGE, THE UNIT SHOULD REMAIN IN AN UPRIGHT POSITION DURING ALL RIGGING AND MOVING OPERATIONS. TO FACILITATE LIFTING AND MOVING IF A CRANE IS USED, PLACE THE UNIT IN AN ADEQUATE CABLE SLIDE.

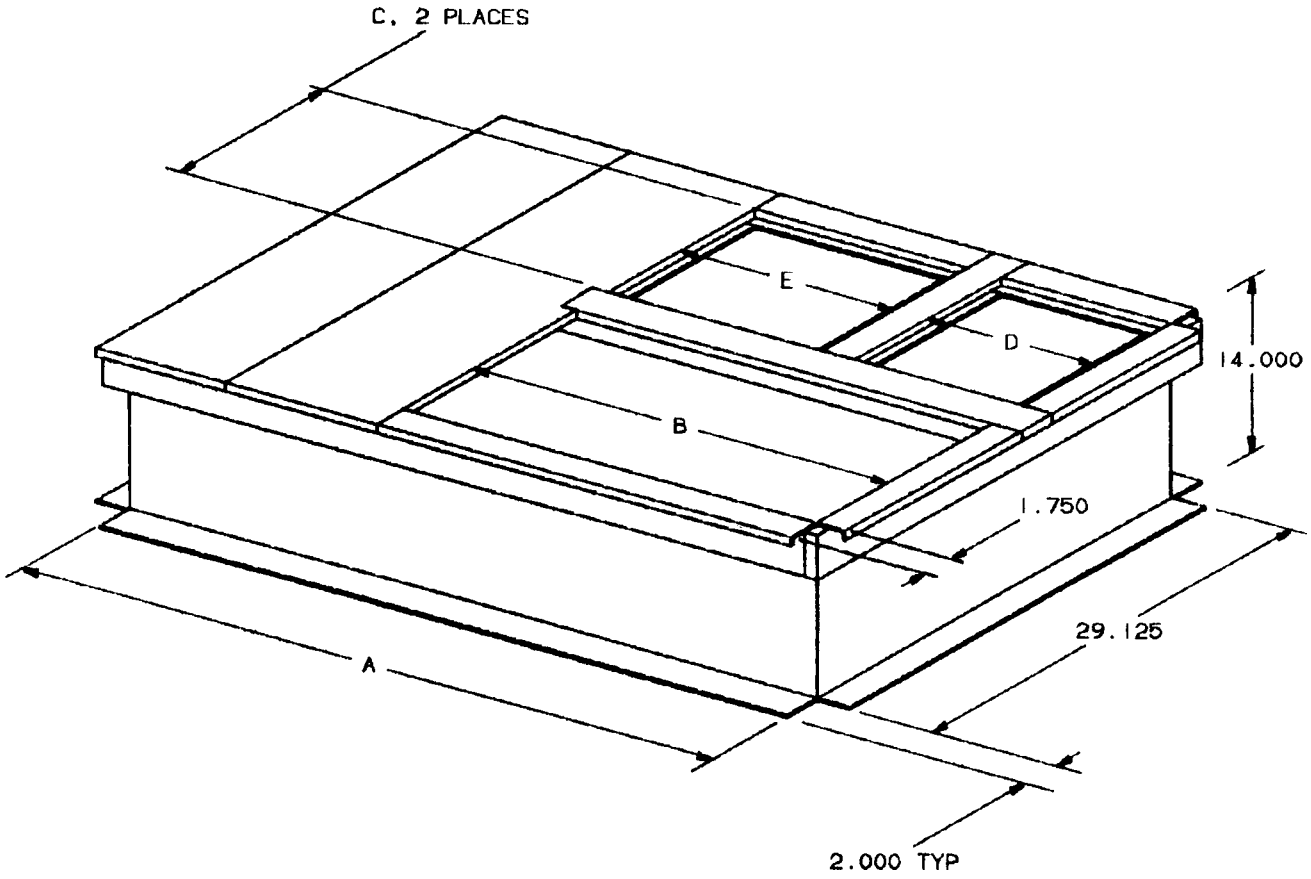
IMPORTANT: If using bottom discharge with roofcurb, ductwork should be attached to the curb prior to installing the unit. Ductwork dimensions are shown in Amana roofcurb installation instructions.

Refer to Amana Roofcurb Installation Instructions for proper curb installation. Curbing must be installed in compliance with the National Roofing Contractors Association Manual.

Lower unit carefully onto roof mounting curb. While rigging unit, center of gravity will cause condenser end to be lower than supply air end.

If using a fork lift, see Figure -- for location of fork prongs. Make certain prongs support unit's weight.

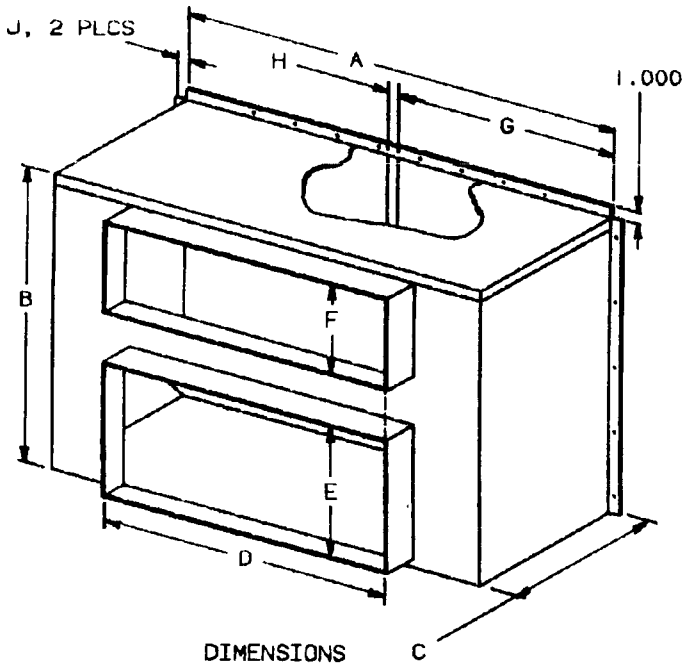
SPECIFICATIONS



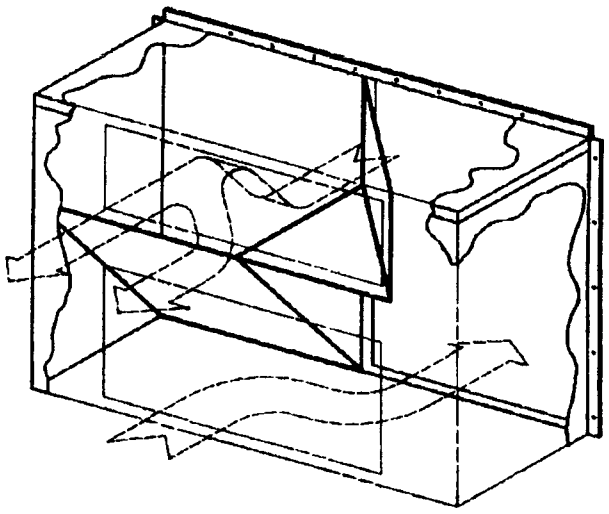
AMANA MODEL	"A" DIM	"B" DIM	"C" DIM	"D" DIM	"E" DIM
PRC3A P9850401C	60"	41 1/2"	15"	15"	24"
PRC5A P9850402C	73 1/4"	45 1/4"	18 3/4"	19 1/4"	23"

Rooftop Curb	PRC3A (24-36) PRC5A (42-60)	Installed when package unit is installed on roof. Ductwork and electrical connections can be made through curb.

SPECIFICATIONS



DIMENSIONS


AIR FLOW

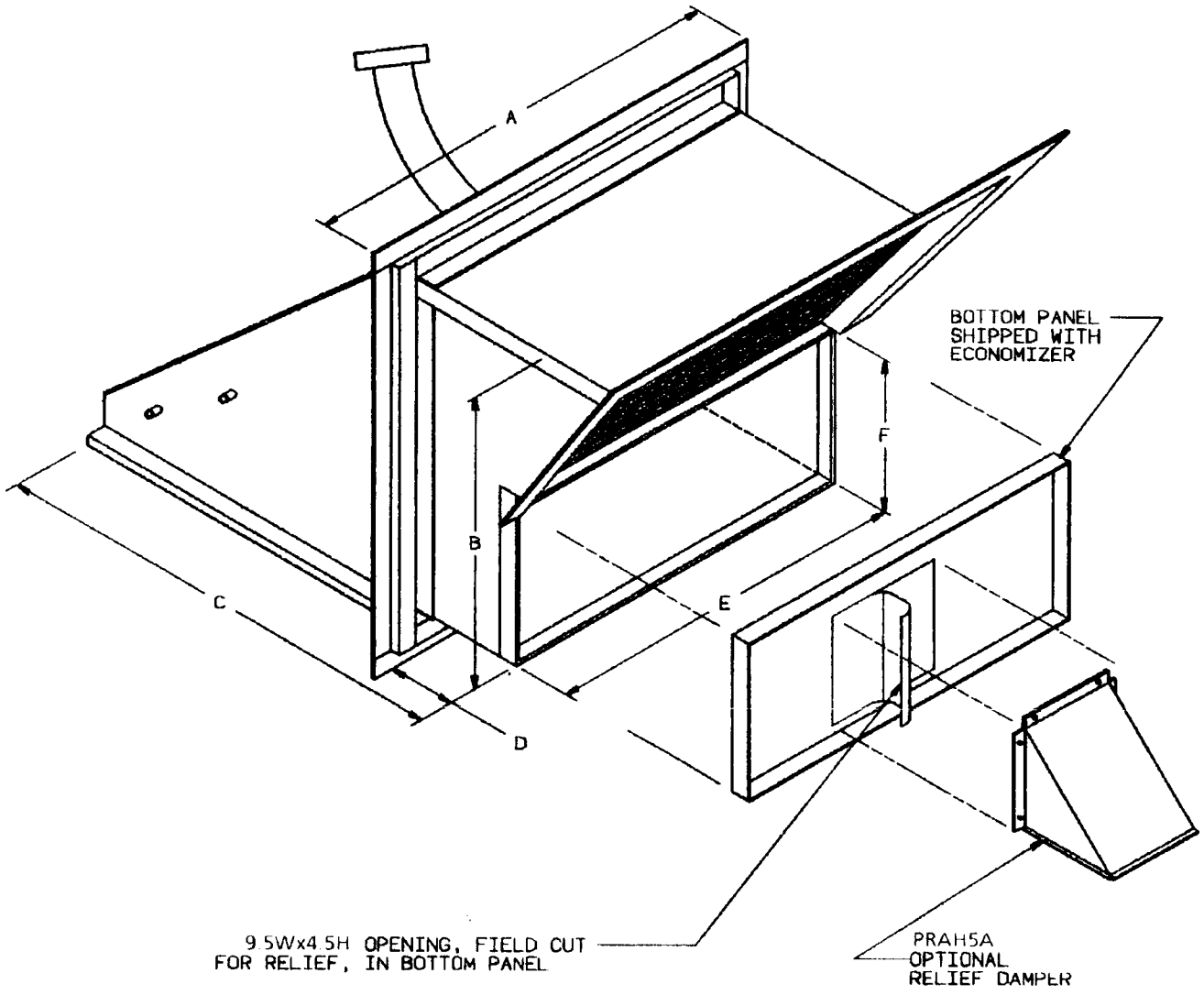
AMANA MODEL	"A" DIM	"B" DIM	"C" DIM	"D" DIM	"E" DIM	"F" DIM	"G" DIM	"H" DIM	"J" DIM
PDTROU3A	39 1/2"	26 7/16"	12"	26 1/4"	15 1/4"	6 7/8"	20 11/16"	9/16"	9/16"
PDTROU5A	46"	32"	12"	39 3/4"	15 3/4"	10 1/4"	24 1/4"	1"	1"

Duct Transition Over/Under	PDTROU3A (24-36) PDTROU5A (42-60)	Converts existing side by side duct connections to over/under ductwork. (For replacement purposes. Amana's preceding units had over/under ducts.)

PDTROU3A	
CFM	TOTAL PRESSURE DROP WC"
700	.065"
900	.11"
1200	.19"

PDTROU5A	
CFM	TOTAL PRESSURE DROP WC"
1400	.06"
1600	.08"
1800	.10"

SPECIFICATIONS



AMANA MODEL	"A" DIM	"B" DIM	"C" DIM	"D" DIM	"E" DIM	"F" DIM
PECE3A (24-36)	20 3/4"	17 9/16"	23 1/2"	6 1/16"	18 1/4"	6 7/16"
PECE5A (42-60)	24"	24 7/16"	28 7/8"	10"	21 3/8"	6 3/4"

Downflow Economizer	PECE3A (24-36) PECE5A (42-60)	Reduces the amount of time the compressor operates. If the outdoor air can provide the desired amount of cooling, the outdoor air damper will open. If the outdoor air gets too humid, the enthalapy control detects the condition and automatically closes the outdoor air damper, opens the return air damper, and switches to compressor operation.
Barometric Relief Hood	PRAH5A (All)	Relieves excessive building pressure. Use with PECE economizer.

PACKAGE COOLING SPECIFICATIONS

MODEL	PCA24B0002x SPCO24001A	PCA30B0002x SPCO30001A	PCA36B0002 A	PCA36B0002 B	PCA36B0003x SPCO36003A	PCA36B0004x
COOLING CAPACITY, BTUH	24,000	30,000	36,000	36,000	36,000	36,000
COMPRESSOR						
R.L. AMPS	11.5	13.5	16.0	15.4	10.6	4.35
L.R. AMPS	56.0	71.0	86.0	81.0	59.5	32.8
CONDENSER COIL						
FACE AREA, SQ FT	12.3	12.3	14.0	14.0	14.0	14.0
ROWS DEEP	1 1/2	2	2	2	2	2
FINS/INCH	13	13	13	13	13	13
CONDENSER FAN						
DIAMETER	20	20	20	20	20	20
CFM	2670	2700	3060	3060	3060	3060
CONDENSER FAN MOTOR						
HORSEPOWER	1/8	1/4	1/4	1/4	1/4	1/4
R.L. AMPS	0.8	1.2	1.5	1.5	1.5	0.7
L.R. AMPS	1.5	3.0	3.4	3.4	3.4	1.6
BLOWER MOTOR						
HORSEPOWER	1/3	1/3	1/3	1/3	1/3	1/3
R.L. AMPS	3.0	3.0	3.0	3.0	3.0	3.0
L.R. AMPS	4.8	4.8	4.8	4.8	4.8	4.8
BLOWER WHEEL WxD	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10
RATED CFM, COOLING	850	1100	1300	1300	1300	1300
MAX. EXT. STATIC PRESS*	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	4.0	4.0	4.0	4.0	4.0	4.0
ROW DEEP	2.0	2.0	4.0	4.0	4.0	4.0
FINS / INCH	16.0	16.0	12.0	12.0	12.0	12.0
EXT. FILTER SIZE SQ. FT.	3.0	3.0	3.5	3.5	3.5	3.5
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	64.0 oz.	84.1 oz.	119.7 oz.	109.0 oz.	119.7 oz.	119.7 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-3	460-60-3
POWER WIRES (AWG)	10	10	10	10	10	14
GROUND AWG	10	10	10	10	10	14
MIN.CIRCUIT AMPACITY	18.2	21	24.6	23.8	17.9	7.5
MAX OVERCURRENT DEVICE	25	30	35	35	25	10
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	355	355	355	392	355	392

* With field installed Electric Heater Kits.

** **IMPORTANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes. Data shown is w/o electric heaters. See "Electric Heaters" in the SYSTEM OPERATION section for additional information.

⚠ WARNING **All wires and overcurrent protection devices are sized without electric heaters. If heaters are installed with above wire size, overheating and fire could occur. Refer to heater kit installation manual for wire size and overcurrent protection device size with heaters installed. Also refer to the unit nameplate.**

PACKAGE COOLING SPECIFICATIONS

MODEL	PCA42B0002A/C SPCO42001A	PCA42B0003A/C SPCO42003A	PCA48B0002A/B/C	PCA48B0003A/B/C	PCA48B0004A/C SPCO48004A
COOLING CAPACITY, BTUH	42,000	42,000	48,000	48,000	48,000
COMPRESSOR					
R.L. AMPS	20.2	12.8	21.5	13.7	6.4
L.R. AMPS	93.0	74.0	95.4	82.0	42.0
CONDENSER COIL					
FACE AREA, SQ FT	17.2	17.2	17.2	17.2	17.2
ROWS DEEP	2	2	2	2	2
FINS/INCH	13	13	17	17	17
CONDENSER FAN					
DIAMETER	24	24	24	24	24
CFM	3500	3500	3700	3700	3700
CONDENSER FAN MOTOR					
HORSEPOWER	1/4	1/4	1/4	1/4	1/4
R.L. AMPS	1.5	1.5	1.5	1.5	0.7
L.R. AMPS	3.4	3.4	3.4	3.4	1.6
BLOWER MOTOR					
HORSEPOWER	1/3	1/3	3/4	3/4	3/4
R.L. AMPS	3.0	3.0	4.3	4.3	2.7
L.R. AMPS	4.8	4.8	11.8	11.8	5.8
BLOWER WHEEL WxD	7 x 10	7 x 10	8 x 11	8 x 11	8 X 11
RATED CFM, COOLING	1450	1450	1625	1625	1700
MAX. EXT. STATIC PRESS*	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL					
FACE AREA SQ. FT	5.7	5.7	5.7	5.7	5.7
ROW DEEP	2.0	2.0	3.0	3.0	3.0
FINS / INCH	15.0	15.0	15.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	4.0	4	4.9	4.9	4.9
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	119.5	119.5	128.0 oz.	128.0 oz.	140.9 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-3	208/230-60-1	208/230-60-3	460-60-3
POWER WIRES (AWG)	10	10	8	10	14
GROUND AWG	10	10	10	10	14
MIN.CIRCUIT AMPACITY	29.8	20.5	33.8	24	11.4
MAX OVERCURRENT DEVICE	40	25	50	30	15
ELECT. ENTRANCE SIZE					
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	444	444	486	486	486

* With field installed Electric Heater Kits.

** **IMPORTANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes. Data shown is w/o electric heaters. See "Electric Heaters" in the SYSTEM OPERATION section for additional information.

⚠ WARNING **All wires and overcurrent protection devices are sized without electric heaters. If heaters are installed with above wire size, overheating and fire could occur. Refer to heater kit installation manual for wire size and overcurrent protection device size with heaters installed. Also refer to the unit nameplate.**

PACKAGE COOLING SPECIFICATIONS

MODEL	PCA60B0002A/C SPCO60001A	PCA60B0003A/C SPCO60003A	PCA60B0004A/C
COOLING CAPACITY, BTUH	60,000	60,000	60,000
COMPRESSOR			
R.L. AMPS	29.8	19.0	10.4
L.R. AMPS	135.0	105.0	55.0
CONDENSER COIL			
FACE AREA, SQ FT	20.0	20.0	20.0
ROWS DEEP	2	2	2
FINS/INCH	17	17	17
CONDENSER FAN			
DIAMETER	24	24	24
CFM	4700	4700	4700
CONDENSER FAN MOTOR			
HORSEPOWER	1/3	1/3	1/3
R.L. AMPS	2.5	2.5	1.25
L.R. AMPS	6.4	6.4	3.75
BLOWER MOTOR			
HORSEPOWER	3/4	3/4	3/4
R.L. AMPS	5.0	5.0	2.6
L.R. AMPS	12.5	12.5	6.2
BLOWER WHEEL WxD	8 x 11	8 x 11	8 x 11
RATED CFM, COOLING	1800	1800	1750
MAX. EXT. STATIC PRESS*	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL			
FACE AREA SQ. FT	5.7	5.7	5.7
ROW DEEP	4.0	4.0	4.0
FINS / INCH	15.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	5.4	5.4	5.4
DRAIN LINE SIZE	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	TEV	TEV	TEV
REFRIGERANT CHARGE	151.3 oz.	151.3 oz.	151.25 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-3	460-60-3
POWER WIRES (AWG)	6	10	12
GROUND AWG	10	10	12
MIN.CIRCUIT AMPACITY	44.6	31.1	16.9
MAX OVERCURRENT DEVICE	60	40	25
ELECT. ENTRANCE SIZE			
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	525	525	525

* With field installed Electric Heater Kits.

** **IMPORTANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes. Data shown is w/o electric heaters. See "Electric Heaters" in the SYSTEM OPERATION section for additional information.

⚠ WARNING **All wires and overcurrent protection devices are sized without electric heaters. If heaters are installed with above wire size, overheating and fire could occur. Refer to heater kit installation manual for wire size and overcurrent protection device size with heaters installed. Also refer to the unit nameplate.**

PACKAGE COOLING SPECIFICATIONS

MODEL	PCB24B0002x PCB24A0002	PCB30B0002x PCB30A0002	PCB36B0002x PCB36A0002	PCB42B0002x PCB42A0002	PCB48B0002x PCB48A0002	PCB60B0002x PCB60A0002
COOLING CAPACITY, BTUH	24,000	30,000	36,000	42,000	48,000	60,000
COMPRESSOR						
R.L. AMPS	11.5	13.5	18.0	19.9	21.8	28.8
L.R. AMPS	62.5	76.0	90.5	107.0	105.0	169.0
CONDENSER COIL						
FACE AREA, SQ FT	12.3	12.3	14.0	17.2	17.2	17.2
ROWS DEEP	1 1/2	2	2	2	2	2
FINS/INCH	13	13	13	13	17	17
CONDENSER FAN						
DIAMETER	20	20	20	24	24	24
CFM	2670	2700	3060	3500	3700	4700
CONDENSER FAN MOTOR						
HORSEPOWER	1/8	1/4	1/4	1/4	1/4	1/3
R.L. AMPS	0.8	1.2	1.5	1.5	1.5	2.5
L.R. AMPS	1.5	3.0	3.4	3.4	3.4	6.4
BLOWER MOTOR						
HORSEPOWER	1/3	1/3	1/3	1/3	3/4	3/4
R.L. AMPS	3.0	3.0	3.0	3.0	4.3	5.0
L.R. AMPS	4.8	4.8	4.8	4.8	11.8	12.5
BLOWER WHEEL WxD	7 x 10	7 x 10	7 x 10	7 x 10	8 x 11	8 x 11
RATED CFM, COOLING	850	1100	1300	1450	1700	1800
MAX. EXT. STATIC PRESS*	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	4.0	4.0	4.0	5.7	5.7	5.7
ROW DEEP	2.0	2.0	4.0	2.0	3.0	4.0
FINS / INCH	16.0	16.0	12.0	15.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	3.6	3.6	3.6	5.3	5.3	5.3
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	TEV	TEV
REFRIGERANT CHARGE	63.7 oz.	82.2 oz.	177.9 oz.	112.7 oz.	135.2 oz.	154.9 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1
POWER WIRES (AWG)	10	10	10	10	8	6
GROUND AWG	10	10	10	10	10	10
MIN.CIRCUIT AMPACITY	18.2	21.0	26.9	29.3	33.1	43.5
MAX OVERCURRENT DEVICE	25	30	35	40	50	60
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	344	365	383	438	483	522

* With field installed Electric Heater Kits.

** **IMPORTANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes. Data shown is w/o electric heaters. See "Electric Heaters" in the SYSTEM OPERATION section for additional information.

WARNING **All wires and overcurrent protection devices are sized without electric heaters. If heaters are installed with above wire size, overheating and fire could occur. Refer to heater kit installation manual for wire size and overcurrent protection device size with heaters installed. Also refer to the unit nameplate.**

PACKAGE HEAT PUMP SPECIFICATIONS

MODEL	PHA24B0002x SPHO24001A	PHA30B0002x SPHO30001A	PHA36B0002x SPHO36001A	PHA36B0003x SPHO36003A	PHA42B0002x SPHO42001A	PHA42B0003x SPHO42003A
COOLING CAPACITY, BTUH	24,000	3,000	36,000	36,000	42,000	42,000
COMPRESSOR						
R.L. AMPS	12.9	14.6	15.3	10.6	20.2	12.8
L.R. AMPS	61.0	71.0	86.0	59.5	93.0	74.0
CONDENSER COIL						
FACE AREA, SQ FT	14.0	14.0	14.0	14.0	17.5	17.5
ROWS DEEP	2	2	2	2	2	2
FINS/INCH	17	17	17	17	17	17
CONDENSER FAN						
DIAMETER	20	20	20	20	24	24
CFM	2900	2900	3060	3060	3875	3875
CONDENSER FAN MOTOR						
HORSEPOWER	1/4	1/4	1/4	1/4	1/4	1/4
R.L. AMPS	1.2	1.2	3.4	3.4	1.5	1.5
L.R. AMPS	3.0	3.0	3.4	3.4	3.4	3.4
BLOWER MOTOR						
HORSEPOWER	1/3	1/3	1/3	1/3	1/3	1/3
R.L. AMPS	3.0	3.0	3.0	3.0	3.0	3.0
L.R. AMPS	4.8	4.8	4.8	4.8	4.8	4.8
BLOWER WHEEL WxD	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10
RATED CFM, COOLING	900	1100	1270	1270	1400	1400
MAX. EXT. STATIC PRESS*	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	4.0	4.0	4.0	4.0	5.7	5.7
ROW DEEP	3.0	3.0	4.0	4.0	3.0	3.0
FINS / INCH	15.0	15.0	12.0	12.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	3	3	3.5	3.5	4	4
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Orifice	Orifice	Orifice	Orifice	Orifice	Orifice
REF. EXP. DEVICE, HTG	TEV	Orifice	TEV	TEV	Orifice	Orifice
REFRIGERANT CHARGE	119.4 oz.	112.1 oz.	126.6 oz.	126.6 oz.	132.2 oz.	132.2 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-3	208/230-60-1	208/230-60-3
NUMBER WIRES (AWG)	2 (10)	2 (10)	2 (10)	3 (10)	2 (10)	3 (10)
GROUND AWG	10	10	10	10	10	10
MIN.CIRCUIT AMPACITY	20.3	22.8	23.6	17.8	29.8	20
MAX OVERCURRENT DEVICE	30	30	30	25	40	25
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	370	370	370	370	471	471

* With field installed Electric Heater Kits.

** **IMPORTANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes. Data shown is w/o electric heaters. See "Electric Heaters" in the SYSTEM OPERATION section for additional information.

⚠ WARNING **All wires and overcurrent protection devices are sized without electric heaters. If heaters are installed with above wire size, overheating and fire could occur. Refer to heater kit installation manual for wire size and overcurrent protection device size with heaters installed. Also refer to the unit nameplate.**

PACKAGE HEAT PUMP SPECIFICATIONS

MODEL	PHA48B0002x SPCO48001A	PHA48B0003x SPCO48003A	PHA60B0002 A	PHA60B0002 B	PHA60B0003 A	PHA60B0003 B
COOLING CAPACITY, BTUH	48,000	48,000	60,000	60,000	60,000	60,000
COMPRESSOR						
R.L. AMPS	25.4	16.6	28.7	24.6	20.8	16.0
L.R. AMPS	110.0	92.0	135.0	147.0	105.0	150.0
CONDENSER COIL						
FACE AREA, SQ FT	20.0	20.0	20.0	20.0	20.0	20.0
ROWS DEEP	2	2	2	2	2	2
FINS/INCH	18	17	17	17	17	17
CONDENSER FAN						
DIAMETER	24	24	24	24	24	24
CFM	4500	4500	4500	4462	4500	4462
CONDENSER FAN MOTOR						
HORSEPOWER	1/3	1/3	1/3	1/3	1/3	1/3
R.L. AMPS	2.5	2.5	2.5	1.7	2.5	1.7
L.R. AMPS	6.4	6.4	6.4	6.2	6.4	6.2
BLOWER MOTOR						
HORSEPOWER	3/4	3/4	3/4	0.75	3/4	0.75
R.L. AMPS	4.3	4.3	4.8	4.8	4.8	4.8
L.R. AMPS	11.8	11.8	12.5	12.5	12.5	12.5
BLOWER WHEEL WxD	8x11	8x11	8x11	8x11	8x11	8x11
RATED CFM, COOLING	1700	1700	1800	1800	1800	1800
MAX. EXT. STATIC PRESS*	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	5.7	5.7	5.7	5.7	5.7	5.7
ROW DEEP	3.0	3.0	4.0	4.0	4.0	4.0
FINS / INCH	15.0	15.0	12.0	15.0	12.0	15.0
EXT. FILTER SIZE SQ. FT.	4.9	4.9	5.4	5.4	5.4	5.4
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	TEV	TEV	TEV	TEV	TEV	TEV
REF. EXP. DEVICE, HTG	Orifice	Orifice	Orifice	Orifice	Orifice	Orifice
REFRIGERANT CHARGE	145.4 oz.	145.4 oz.	162.2 oz.	162.2 oz.	162.2 oz.	162.2oz.
POWER SUPPLY**	208/230-60-1	208/230-60-3	208/230-60-1	208/230-60-1	208/230-60-3	208/230-60-3
NUMBER WIRES (AWG)	2 (8)	3 (10)	2 (6)	6	3 (8)	10
GROUND AWG	10	10	10	10	10	10
MIN.CIRCUIT AMPACITY	39.7	28.7	44.4	46	29.6	29.1
MAX OVERCURRENT DEVICE	50	40	60	60	40	40
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	524	524	634	534	534	534

* With field installed Electric Heater Kits.

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WARNING **All wires and overcurrent protection devices are sized without electric heaters. If heaters are installed with above wire size, overheating and fire could occur. Refer to heater kit installation manual for wire size and overcurrent protection device size with heaters installed. Also refer to the unit nameplate.**

PACKAGE GAS SPECIFICATIONS

MODEL	PGA24B0452x SPCG240451	PGA24B0702x SPCG240701	PGA24B0902x SPCG240901	PGA30B0452x SPCG300451	PGA30B0702x SPCG300701	PGA30B0902x SPCG300901
COOLING CAPACITY, BTUH	24,000	24,000	24,000	30,000	30,000	30,000
HEATING INPUT BTUH US	45,000	70,000	90,000	45,000	70,000	90,000
CANADIAN (0-2000 FT)	45,000	70,000	90,000	45,000	70,000	90,000
CANADIAN (0-4500 FT)	40,500	63,000	81,000	40,500	63,000	81,000
OUTPUT BTUH US	36,000	56,000	72,000	36,000	56,000	72,000
CANADIAN (0-2000 FT)	36,450	56,700	72,900	36,450	56,700	72,900
CANADIAN (0-4500 FT)	32,400	51,030	65,610	32,400	51,030	65,610
TEMPERATURE RISE °F	20 - 50	30 - 60	40 - 70	20 - 50	30 - 60	40 - 70
NUMBER OF BURNERS	2.0	3.0	4.0	2.0	3.0	4.0
COMPRESSOR						
R.L. AMPS	11.5	11.5	11.5	13.5	13.5	13.5
L.R. AMPS	56.0	56.0	56.0	71.0	71.0	71.0
CONDENSER COIL						
FACE AREA, SQ FT	12.3	12.3	12.3	12.3	12.3	12.3
ROWS DEEP	2	2	2	2	2	2
FINS/INCH	13	13	13	13	13	13
CONDENSER FAN						
DIAMETER	20	20	20	20	20	20
CFM	2670	2670	2670	2700	2700	2700
CONDENSER FAN MOTOR						
HORSEPOWER	1/8	1/8	1/8	1/4	1/4	1/4
R.L. AMPS	.80	.80	.80	1.2	1.2	1.2
L.R. AMPS	1.5	1.5	1.5	3.0	3.0	3.0
BLOWER MOTOR						
HORSEPOWER	1/3	1/3	1/3	1/3	1/3	1/3
R.L. AMPS	2.7	2.7	2.7	2.7	2.7	2.7
L.R. AMPS	6.1	6.1	6.1	6.1	6.1	6.1
BLOWER WHEEL WxD	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10
RATED CFM, COOLING	850	850	850	1100	1100	1100
MAX. EXT. STATIC PRESS	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	4.0	4.0	4.0	4.0	4.0	4.0
ROW DEEP	2	2	2	2	2	2
FINS / INCH	16.0	16.0	16.0	16.0	16.0	16.0
EXT. FILTER SIZE SQ. FT.	3.0	3.75	4.5	3.0	3.75	4.5
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	64.0 oz.	64.0 oz.	64.0 oz.	84.1 oz.	84.1 oz.	84.1 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1
POWER WIRES (AWG)	10	10	10	10	10	10
GROUND AWG	10	10	10	10	10	10
MIN.CIRCUIT AMPACITY	17.9	17.9	17.9	20.8	20.8	20.8
MAX OVERCURRENT DEVICE	25	25	25	30	30	30
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	370	370	370	377	377	377

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PACKAGE GAS SPECIFICATIONS

MODEL	PGA36B0452x SPCG360451	PGA36B0453x SPCG360453	PGA36B0702x SPCG360701	PGA36B0703x SPCG360703	PGA36B0704 A	PGA36B0902x SPCG360901
COOLING CAPACITY, BTUH	36,000	36,000	36,000	36,000	36,000	36,000
HEATING INPUT BTUH US	45,000	45,000	70,000	70,000	70,000	90,000
CANADIAN (0-2000 FT)	45,000	45,000	70,000	70,000		90,000
CANADIAN (0-4500 FT)	40,500	40,500	63,000	63,000		81,000
OUTPUT BTUH US	36,000	36,000	56,000	56,000	55,000	72,000
CANADIAN (0-2000 FT)	36450	36450	56700	56700		72900
CANADIAN (0-4500 FT)	32400	32400	51030	51030		65610
TEMPERATURE RISE °F	20 - 50	20 - 50	30 - 60	30 - 60	30 - 60	40 - 70
NUMBER OF BURNERS	2.0	2.0	3.0	3.0	0.5	4.0
COMPRESSOR						
R.L. AMPS	15.3	10.6	15.3	10.6	4.4	15.3
L.R. AMPS	A 86.0 B/C 81.0	59.5	A 86.0 B/C 81.0	59.5	32.8	A 86.0 B/C 81.0
CONDENSER COIL						
FACE AREA, SQ FT	14.0	14.0	14.0	14.0	14.0	14.0
ROWS DEEP	2	2	2	2	2	2
FINS/INCH	17	17	17	17	13	17
CONDENSER FAN						
DIAMETER	20	20	20	20	20	20
CFM	3000	3000	3000	3000	3000	3000
CONDENSER FAN MOTOR						
HORSEPOWER	1/4	1/4	1/4	1/4	1/4	1/4
R.L. AMPS	1.5	1.5	1.5	1.5	0.7	1.5
L.R. AMPS	3.4	3.4	3.4	3.4	1.6	3.4
BLOWER MOTOR						
HORSEPOWER	1/3	1/3	1/3	1/3	1/3	1/3
R.L. AMPS	2.7	2.7	2.7	2.7	1.5	2.7
L.R. AMPS	6.1	6.1	6.1	6.1	3.4	6.1
BLOWER WHEEL WxD	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10
RATED CFM, COOLING	1300	1300	1300	1300	1300	1300
MAX. EXT. STATIC PRESS	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	4.0	4.0	4.0	4.0	4.0	4.0
ROW DEEP	4	4	4	4	4	4
FINS / INCH	12.0	12.0	12.0	12.0	12.0	12.0
EXT. FILTER SIZE SQ. FT.	3.0	3.0	3.75	3.75	4.5	4.5
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	119.7 oz.	119.7 oz.	119.7 oz.	119.7 oz.	119.7 oz.	119.7 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-3	208/230-60-1	208/230-60-3	460-60-3	208/230-60-1
POWER WIRES (AWG)	8	10	8	10	14	8
GROUND AWG	10	10	10	10	14	10
MIN.CIRCUIT AMPACITY	24.1	18.3	24.1	18.3	7.6	24.1
MAX OVERCURRENT DEVICE	35	25	35	25	15	35
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	384	384	384	384	400	384

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PACKAGE GAS SPECIFICATIONS

MODEL	PGA36B0903x SPCG360903	PGA36B0904 A	PGA42B0902x SPCG420901	PGA42B0903x SPCG420903	PGA42B1152x SPCG421151	PGA42B1153x SPCG421153
COOLING CAPACITY, BTUH	36000	36000	42000	42000	42000	42000
HEATING INPUT BTUH US	90000	90000	90000	90000	115000	115000
CANADIAN (0-2000 FT)	90000		90000	90000	115000	115000
CANADIAN (0-4500 FT)	81000		81000	81000	103500	103500
OUTPUT BTUH US	72000	70000	72000	72000	92000	92000
CANADIAN (0-2000 FT)	72900		72900	72900	93150	93150
CANADIAN (0-4500 FT)	65610		65610	65610	83835	83835
TEMPERATURE RISE °F	40 - 70	40 - 70	25 - 55	25 - 55	40 - 70	40 - 70
NUMBER OF BURNERS	4.0	4.0	4.0	4.0	5.0	5.0
COMPRESSOR						
R.L. AMPS	10.6	4.4	20.2	12.8	20.2	12.8
L.R. AMPS	59.5	32.8	93.0	74.0	93.0	74.0
CONDENSER COIL						
FACE AREA, SQ FT	14.0	14.0	17.5	17.5	17.5	17.5
ROWS DEEP	2	2	2	2	2	2
FINS/INCH	17	13	13	13	13	13
CONDENSER FAN						
DIAMETER	20	20	24	24	24	24
CFM	3000	3000	3500	3500	3500	3500
CONDENSER FAN MOTOR						
HORSEPOWER	1/4	1/4	1/4	1/4	1/4	1/4
R.L. AMPS	1.5	0.7	1.5	1.5	1.5	1.5
L.R. AMPS	3.4	1.6	2.8	2.8	2.8	2.8
BLOWER MOTOR						
HORSEPOWER	1/3	1/3	3/4	3/4	3/4	3/4
R.L. AMPS	2.7	1.5	5.0	5.0	5.0	5.0
L.R. AMPS	6.1	3.4	12.9	12.9	12.9	12.9
BLOWER WHEEL WxD	7 x 10	7 x 10	10 x 10	10 x 10	10 x 10	10 x 10
RATED CFM, COOLING	1300	1300	1400	1400	1400	1400
MAX. EXT. STATIC PRESS	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	4.00	4.00	5.7	5.7	5.7	5.7
ROW DEEP	4	4	2	2	2	2
FINS / INCH	12.0	12.0	15.0	15.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	4.5	4.5	4.5	4.5	6.0	6.0
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	119.7 oz.	119.7 oz.	119.5 oz.	119.5 oz.	119.5 oz.	119.5 oz.
POWER SUPPLY**	208/230-60-3	460-60-3	208/230-60-1	208/230-60-3	208/230-60-1	208/230-60-3
POWER WIRES (AWG)	10	14	8	10	8	10
GROUND AWG	10	14	10	10	10	10
MIN.CIRCUIT AMPACITY	18.3	7.6	31.8	22.5	31.8	22.5
MAX OVERCURRENT DEVICE	25	15	50	35	50	35
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	384	400	521	521	521	521

** **IMPORANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes.

PACKAGE GAS SPECIFICATIONS

MODEL	PGA48B0902x SPCG480901	PGA48B0903x SPCG480903	PGA48B0904 A	PGA48B1152x SPCG481151	PGA48B1153x SPCG481153	PGA48B1352x SPCG481351
COOLING CAPACITY, BTUH	48000	48000	48000	48000	48000	48000
HEATING INPUT BTUH US	90000	90000	90000	115000	115000	135000
CANADIAN (0-2000 FT)	90000	90000		115000	115000	135000
CANADIAN (0-4500 FT)	81000	81000		103500	103500	121500
OUTPUT BTUH US	72000	72000	72000	92000	92000	108000
CANADIAN (0-2000 FT)	72900	72900		93150	93150	109350
CANADIAN (0-4500 FT)	65610	65610		83835	83835	98415
TEMPERATURE RISE °F	25 - 55	25 - 55	25 - 55	40 - 70	40 - 70	40 - 70
NUMBER OF BURNERS	4.0	4.0	4.0	5.0	5.0	6.0
COMPRESSOR						
R.L. AMPS	21.5	13.7	6.4	21.5	13.7	21.5
L.R. AMPS	94.4	82.0	42.0	94.4	82.0	94.4
CONDENSER COIL						
FACE AREA, SQ FT	17.5	17.5	17.5	17.5	17.5	17.5
ROWS DEEP	2	2	2	2	2	2
FINS/INCH	17	17	A-13 B/C-17	A-13 B/C-17	A-13 B/C-17	17
CONDENSER FAN						
DIAMETER	24	24	24	24	24	24
CFM	3700	3700	3700	3700	3700	3700
CONDENSER FAN MOTOR						
HORSEPOWER	1/4	1/4	1/4	1/4	1/4	1/4
R.L. AMPS	1.5	1.5	0.7	1.5	1.5	1.5
L.R. AMPS	2.8	2.8	1.6	2.8	2.8	2.8
BLOWER MOTOR						
HORSEPOWER	3/4	3/4	3/4	3/4	3/4	3/4
R.L. AMPS	5.0	5.0	2.1	5.0	5.0	5.6
L.R. AMPS	12.9	12.9	6.3	12.9	12.9	12.9
BLOWER WHEEL WxD	10 x 10	10 x 10	10 x 10	10 x 10	10 x 10	8 x 11
RATED CFM, COOLING	1700	1700	1700	1700	1700	1700
MAX. EXT. STATIC PRESS	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.4" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	5.7	5.7	5.7	5.7	5.7	5.7
ROW DEEP	3	3	3	3	3	3
FINS / INCH	15.0	15.0	15.0	15.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	4.5	4.5	4.5	6.0	6.0	6.75
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	128.0 oz.	128.0 oz.	140.9 oz.	128.0 oz.	128.0 oz.	128
POWER SUPPLY**	208/230-60-1	208/230-60-3	460-60-3	208/230-60-1	208/230-60-3	208/230-60-1
POWER WIRES (AWG)	8	10	14	8	10	8
GROUND AWG	10	10	14	10	10	10
MIN.CIRCUIT AMPACITY	33.4	23.6	10.8	33.4	23.6	33.4
MAX OVERCURRENT DEVICE	50	35	15	50	35	50
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	526	526	545	526	526	526

** **IMPORANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes.

PACKAGE GAS SPECIFICATIONS

MODEL	PGA48B1353x SPCG481353	PGA48B1354 A	PGA60B0902x SPCG600901	PGA60B0903x SPCG600903	PGA60B1152x SPCG601151	PGA60B1153x SPCG601153
COOLING CAPACITY, BTUH	48000	48000	60000	6000	60000	60000
HEATING INPUT BTUH US	135000	135000	90000	90000	115000	115000
CANADIAN (0-2000 FT)	135000		90000	90000	115000	115000
CANADIAN (0-4500 FT)	121500		81000	81000	103500	103500
OUTPUT BTUH US	108000	106000	72000	72000	92000	92000
CANADIAN (0-2000 FT)	109350		72900	72900	93150	93150
CANADIAN (0-4500 FT)	98415		65610	65610	83835	83835
TEMPERATURE RISE °F	40 - 70	40 - 70	25 - 55	25 - 55	40 - 70	40 - 70
NUMBER OF BURNERS	6.0	6.0	4.0	4.0	5.0	5.0
COMPRESSOR						
R.L. AMPS	13.7	6.4	29.8	19.0	29.8	19.0
L.R. AMPS	82.0	42.0	135.0	105.0	135.0	105.0
CONDENSER COIL						
FACE AREA, SQ FT	17.5	17.5	20.0	20.0	20.0	20.0
ROWS DEEP	2	2	2	2	2	2
FINS/INCH	13	17	17	17	17	17
CONDENSER FAN						
DIAMETER	24	24	24	24	24	24
CFM	3700	3700	4670	4670	4670	4670
CONDENSER FAN MOTOR						
HORSEPOWER	1/4	1/4	1/2	1/2	1/2	1/2
R.L. AMPS	1.5	0.7	2.5	2.5	2.5	2.5
L.R. AMPS	2.8	1.6	6.2	6.2	6.2	6.2
BLOWER MOTOR						
HORSEPOWER	3/4	3/4	3/4	3/4	3/4	3/4
R.L. AMPS	5.6	2.7	5.6	5.6	5.6	5.6
L.R. AMPS	12.9	6.3	12.9	12.9	12.9	12.9
BLOWER WHEEL WxD	8 x 11	8 x 11	8 x 11	8 x 11	8 x 11	8 x 11
RATED CFM, COOLING	1700	1700	1750	1750	1750	1750
MAX. EXT. STATIC PRESS	0.4" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	5.7	5.7	5.7	5.7	5.7	5.7
ROW DEEP	3.0	3.0	4.0	4.0	4.0	4.0
FINS / INCH	15.0	15.0	15.0	15.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	6.75	6.75	4.5	4.5	6.0	6.0
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	TEV	TEV	TEV	TEV
REFRIGERANT CHARGE	128.0 oz.	140.9 oz.	151.3 oz.	151.3 oz.	151.3 oz.	151.3 oz.
POWER SUPPLY**	208/230-60-3	460-60-3	208/230-60-1	208/230-60-3	208/230-60-1	208/230-60-3
POWER WIRES (AWG)	10	14	6	8	6	8
GROUND AWG	10	14	8	10	8	10
MIN.CIRCUIT AMPACITY	23.6	10.8	45.4	31.9	45.4	31.9
MAX OVERCURRENT DEVICE	35	15	70	50	70	50
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	526	545	531	531	531	531

** **IMPORANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes.

PACKAGE GAS SPECIFICATIONS

MODEL	PGA60B1154A PGA60B1154C	PGA60B1352A/C SPCG601351A	PGA60B1353A/C SPCG601353A	PGA60B1354A PGA60B1354C
COOLING CAPACITY, BTUH	60000	60000	60000	60000
HEATING INPUT BTUH US	115000	135000	135000	135000
CANADIAN (0-2000 FT)		135000	135000	
CANADIAN (0-4500 FT)		121500	121500	
OUTPUT BTUH US	89000	108000	108000	106000
CANADIAN (0-2000 FT)		109350	109350	
CANADIAN (0-4500 FT)		98415	98415	
TEMPERATURE RISE °F	40 - 70	40 - 70	40 - 70	40 - 70
NUMBER OF BURNERS	5.0	6.0	6.0	6.0
COMPRESSOR				
R.L. AMPS	10.4	29.8	19.0	10.4
L.R. AMPS	55.0	135.0	105.0	55.0
CONDENSER COIL				
FACE AREA, SQ FT	20.0	20.0	20.0	20.0
ROWS DEEP	2	2	2	2
FINS/INCH	17	17	17	17
CONDENSER FAN				
DIAMETER	24	24	24	24
CFM	4670	4670	4670	4670
CONDENSER FAN MOTOR				
HORSEPOWER	1/3	1/2	1/2	1/3
R.L. AMPS	1.25	2.50	2.50	1.25
L.R. AMPS	3.75	6.20	6.20	3.75
BLOWER MOTOR				
HORSEPOWER	3/4	3/4	3/4	3/4
R.L. AMPS	2.70	5.60	5.60	2.70
L.R. AMPS	6.30	12.90	12.90	6.30
BLOWER WHEEL WxD	8 x 11	8 x 11	8 x 11	8 x 11
RATED CFM, COOLING	1750	1750	1750	1750
MAX. EXT. STATIC PRESS	0.5" w c	0.4" w c	0.4" w c	0.5" w c
EVAPORATOR COIL				
FACE AREA SQ. FT	5.7	5.7	5.7	5.7
ROW DEEP	4.0	4.0	4.0	4.0
FINS / INCH	15.0	15.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	6.75	6.75	6.75	6.75
DRAIN LINE SIZE	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	TEV	TEV	Capillary
REFRIGERANT CHARGE	151.25 oz.	151.3 oz.	151.3 oz.	151.25 oz.
POWER SUPPLY**	460-60-3	208/230-60-1	208/230-60-3	460-60-3
POWER WIRES (AWG)	12	6	8	12
GROUND AWG	12	8	10	12
MIN.CIRCUIT AMPACITY	17.0	45.4	31.9	17.0
MAX OVERCURRENT DEVICE	20	70	50	20
ELECT. ENTRANCE SIZE				
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	550	531	531	550

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PACKAGE GAS SPECIFICATIONS

MODEL	PGB24A0452x PGB24B0452	PGB24A0702x PGB24B0702	PGB24A0902x PGB24B0902	PGB30A0452x PGB30B0452	PGB30A0702x PGB30B0702	PGB30A0902x PGB30B0902
COOLING CAPACITY, BTUH	24,000	24,000	24,000	30,000	30,000	30,000
HEATING INPUT BTUH US	45,000	70,000	90,000	45,000	70,000	90,000
CANADIAN (0-2000 FT)	45,000	70,000	90,000	45,000	70,000	90,000
CANADIAN (0-4500 FT)	40,500	63,000	81,000	40,500	63,000	81,000
OUTPUT BTUH US	36,000	56,000	72,000	36,000	56,000	70,000
CANADIAN (0-2000 FT)	36,450	56,700	72,900	36,450	56,700	72,900
CANADIAN (0-4500 FT)	32,400	51,030	65,610	32,400	51,030	65,610
TEMPERATURE RISE °F	20 - 50	30 - 60	40 - 70	20 - 50	30 - 60	40 - 70
NUMBER OF BURNERS	2	3	4	2	3	4
COMPRESSOR						
R.L. AMPS	12.9	12.9	12.9	15.0	15.0	15.0
L.R. AMPS	62.5	62.5	62.5	76.0	76.0	76.0
CONDENSER COIL						
FACE AREA, SQ FT	12.3	12.3	12.3	12.3	12.3	12.3
ROWS DEEP	1.5	1.5	1.5	2	2	2
FINS/INCH	13	13	13	13	13	13
CONDENSER FAN						
DIAMETER	20	20	20	20	20	20
CFM	2670	2670	2670	2700	2700	2700
CONDENSER FAN MOTOR						
HORSEPOWER	1/8	1/8	1/8	1/4	1/4	1/4
R.L. AMPS	0.80	0.80	0.80	1.20	1.20	1.20
L.R. AMPS	1.5	1.5	1.5	3.0	3.0	3.0
BLOWER MOTOR						
HORSEPOWER	1/3	1/3	1/3	1/3	1/3	1/3
R.L. AMPS	2.7	2.7	2.7	2.7	2.7	2.7
L.R. AMPS	6.1	6.1	6.1	6.1	6.1	6.1
BLOWER WHEEL WxD	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10	7 x 10
RATED CFM, COOLING	850	850	850	1100	1100	1100
MAX. EXT. STATIC PRESS	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	4.0	4.0	4.0	4.0	4.0	4.0
ROW DEEP	2	2	2	2	2	2
FINS / INCH	16.0	16.0	16.0	16.0	16.0	16.0
EXT. FILTER SIZE SQ. FT.	3.0	3.8	4.5	3.0	3.8	3.8
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	63.7 oz.	63.7 oz.	63.7 oz.	82.2 oz.	82.2 oz.	82.2 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1
POWER WIRES (AWG)	10	10	10	10	10	10
GROUND AWG	10	10	10	10	10	10
MIN.CIRCUIT AMPACITY	19.6	19.6	19.6	22.7	22.7	22.7
MAX OVERCURRENT DEVICE	30	30	30	35	35	35
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	385	394	408	412	418	427

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PACKAGE GAS SPECIFICATIONS

MODEL	PGB36A0452x PGB36B0452A	PGB36A0702x PGB36B0702A	PGB36A0902x PGB36B0902A	PGB42A0902x PGB42B0902A	PGB42A1152x PGB42B1152A
COOLING CAPACITY, BTUH	36,000	36,000	36,000	36,000	42,000
HEATING INPUT BTUH US	45000	70000	90000	90000	115000
CANADIAN (0-2000 FT)	45000	70000	90000	90000	115000
CANADIAN (0-4500 FT)	40500	63000	81000	81000	103500
OUTPUT BTUH US	36000	56000	72000	72000	92000
CANADIAN (0-2000 FT)	36450	56700	72900	72900	93150
CANADIAN (0-4500 FT)	32400	51030	65610	65610	83835
TEMPERATURE RISE °F	20 - 50	30 - 60	40 - 70	25 - 55	40 - 70
NUMBER OF BURNERS	2	3	4	4	5
COMPRESSOR					
R.L. AMPS	20.0	20.0	20.0	22.0	22.0
L.R. AMPS	90.5	90.5	90.5	107.0	107.0
CONDENSER COIL					
FACE AREA, SQ FT	14.0	14.0	14.0	17.2	17.2
ROWS DEEP	2	2	2	2	2
FINS/INCH	13	13	13	13	13
CONDENSER FAN					
DIAMETER	20	20	20	24	24
CFM	3060	3060	3060	3500	3500
CONDENSER FAN MOTOR					
HORSEPOWER	1/4	1/4	1/4	1/4	1/4
R.L. AMPS	1.5	1.5	1.5	1.5	1.5
L.R. AMPS	3.4	3.4	3.4	3.4	3.4
BLOWER MOTOR					
HORSEPOWER	1/3	1/3	1/3	3/4	3/4
R.L. AMPS	2.7	2.7	2.7	5.0	5.0
L.R. AMPS	6.1	6.1	6.1	12.9	12.9
BLOWER WHEEL WxD	7 x 10	7 x 10	7 x 10	10 x 10	10 x 10
RATED CFM, COOLING	1300	1300	1300	1400	1400
MAX. EXT. STATIC PRESS	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL					
FACE AREA SQ. FT	4.0	4.0	4.0	5.7	5.7
ROW DEEP	4	4	4	2	2
FINS / INCH	12.0	12.0	12.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.	3.75	3.75	4.5	4.5	6.0
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	117.9 oz.	117.9 oz.	117.9 oz.	112.7 oz.	112.7 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1
POWER WIRES (AWG)	8	8	8	8	8
GROUND AWG	10	10	10	10	10
MIN.CIRCUIT AMPACITY	29.2	29.2	29.2	34.0	34.0
MAX OVERCURRENT DEVICE	45	45	45	50	50
ELECT. ENTRANCE SIZE					
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	430	437	443	521	527

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PACKAGE GAS SPECIFICATIONS

MODEL	PGB48A0902x PGB48B0902	PGB48A1152x PGB48B1152	PGB48A1352x PGB48B1352	PGB60A0902x PGB60B0902	PGB60A1152x PGB60B1152	PGB60A1352x PGB60B1352
COOLING CAPACITY, BTUH	48,000	48,000	48,000	60,000	60,000	60,000
HEATING INPUT BTUH US	90,000	115,000	135,000	90,000	115,000	135,000
CANADIAN (0-2000 FT)	90,000	115,000	135,000	90,000	115,000	135,000
CANADIAN (0-4500 FT)	81,000	103,500	121,500	81,000	103,500	121,500
OUTPUT BTUH US	72,000	92,000	108,000	72,000	92,000	108,000
CANADIAN (0-2000 FT)	72,900	93,150	109,350	72,900	93,150	109,350
CANADIAN (0-4500 FT)	65,610	83,835	98,415	65,610	83,835	98,415
TEMPERATURE RISE °F	25 - 55	40 - 70	40 - 70	25 - 55	40 - 70	40 - 70
NUMBER OF BURNERS	4	5	6	4	5	6
COMPRESSOR						
R.L. AMPS	21.8	21.8	21.8	28.8	28.8	28.8
L.R. AMPS	105.0	105.0	105.0	169.0	169.0	169.0
CONDENSER COIL						
FACE AREA, SQ FT	17.2	17.2	17.2	17.2	17.2	17.2
ROWS DEEP	2	2	2	2	2	2
FINS/INCH	17	17	17	17	17	17
CONDENSER FAN						
DIAMETER	24	24	24	24	24	24
CFM	3700	3700	3700	4700	4700	4700
CONDENSER FAN MOTOR						
HORSEPOWER	1/4	1/4	1/4	1/3	1/3	1/3
R.L. AMPS	1.5	1.5	1.5	2.5	2.5	2.5
L.R. AMPS	3.4	2.8	2.8	6.4	6.4	6.4
BLOWER MOTOR						
HORSEPOWER	3/4	3/4	3/4	3/4	3/4	3/4
R.L. AMPS	5.0	5.0	5.0	5.0	5.0	5.0
L.R. AMPS	12.9	12.9	12.9	12.9	12.9	12.9
BLOWER WHEEL WxD						
RATED CFM, COOLING	1700	1700	1700	1750	1750	1750
MAX. EXT. STATIC PRESS	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c	0.5" w c
EVAPORATOR COIL						
FACE AREA SQ. FT	5.7	5.7	5.7	5.7	5.7	5.7
ROW DEEP	3.0	3.0	3.0	4.0	4.0	4.0
FINS / INCH	15.0	15.0	15.0	15.0	15.0	15.0
EXT. FILTER SIZE SQ. FT.						
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	TEV	TEV	TEV	TEV	TEV	TEV
REFRIGERANT CHARGE	135.2 oz.	135.2 oz.	135.2 oz.	154.9 oz.	154.9 oz.	154.9 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1
POWER WIRES (AWG)	8	8	8	6	6	6
GROUND AWG	10	10	10	8	8	8
MIN.CIRCUIT AMPACITY	33.75	33.75	33.75	44.1	44.1	44.1
MAX OVERCURRENT DEVICE	50	50	50	70	70	70
ELECT. ENTRANCE SIZE						
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
APPROX. SHIPPING WT	526	526	526	531	531	531

** **IMPORANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes.

PACKAGE GAS SPECIFICATIONS

MODEL	PGC24B0452A	PGC24B0702A	PGC30B0702A	PGC36B0702A	PGC36B0902A
COOLING CAPACITY, BTUH	24,000	24,000	30,000	36,000	36,000
SEER	12.5	12.5	12.3	12.3	12.3
HEATING INPUT BTUH US	45,000	70,000	70,000	70,000	90,000
OUTPUT BTUH US	35,000	55,000	55,000	55,000	70,000
AFUE	80.9	80.1	80.1	80.1	80.4
TEMPERATURE RISE °F	20-50	30-60	30-60	30-60	40-70
NUMBER OF BURNERS	2	3	3	3	4
BURNER ORIFICE SIZE NAT/LP	43	43	43	43	43
COMPRESSOR					
R.L. AMPS	12.9	12.9	15	20	20
L.R. AMPS	62.5	62.5	76	90.5	90.5
CONDENSER COIL					
FACE AREA, SQ FT	12.3	12.3	12.3	14	14
ROWS DEEP	1 1/2	1 1/2	2	2	2
FINS/INCH	13	13	13	13	13
CONDENSER FAN					
DIAMETER	20	20	20	20	20
CFM	2670	2670	2700	3060	3060
CONDENSER FAN MOTOR					
HORSEPOWER	1/8	1/8	1/4	1/4	1/4
R.L. AMPS	0.8	0.8	1.2	1.5	1.5
L.R. AMPS	1.5	1.5	3	3.4	3.4
BLOWER MOTOR					
HORSEPOWER	0.5	0.5	0.5	0.5	0.5
R.L. AMPS	4.3	4.3	4.3	4.3	4.3
L.R. AMPS	Protected by redundant electronic control circuits				
BLOWER WHEEL WxD	10x7	10x7	10x7	10x7	10x7
RATED CFM, COOLING	850	850	1100	1300	1300
MAX. EXT. STATIC PRESS	0.8" w c	0.8" w c	0.8" w c	0.8" w c	0.5" w c
EVAPORATOR COIL					
FACE AREA SQ. FT	4	4	4	4	4
ROW DEEP	2	2	2	4	4
FINS / INCH	16	16	16	12	12
EXT. FILTER SIZE SQ. FT.	3.6	3.6	3.6	3.6	3.6
DRAIN LINE SIZE	3/4	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	Capillary	Capillary	Capillary
REFRIGERANT CHARGE	63.7 oz.	63.7 oz.	82.2 oz.	117.9 oz.	117.9 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1
MIN.CIRCUIT AMPACITY	21.3	21.3	24.3	30.8	30.8
MAX OVERCURRENT DEVICE	30	30	35	45	45
ELECT. ENTRANCE SIZE					
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	7/8"	7/8"	7/8"	7/8"	7/8"
APPROX. SHIPPING WT	385	394	418	437	443

** **IMPORANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes.

PACKAGE GAS SPECIFICATIONS

MODEL	PGC42B0902A	PGC42B1152A	PGC48B0902A	PGC48B1152A
COOLING CAPACITY, BTUH	42,000	42,000	48,000	48,000
SEER	12.2	12.2	12	12
HEATING INPUT BTUH US	90,000	115,000	90,000	115,000
OUTPUT BTUH US	72,000	89,000	72,000	89,000
AFUE	81.4	79.9	81.4	79.9
TEMPERATURE RISE °F	25-55	40-70	25-55	40-70
NUMBER OF BURNERS	4	5	4	5
BURNER ORIFICE SIZE NAT/LP	43	43	43	43
COMPRESSOR				
R.L. AMPS	22	22	21.8	21.8
L.R. AMPS	107	107	105	105
CONDENSER COIL				
FACE AREA, SQ FT	17.2	17.2	17.2	17.2
ROWS DEEP	2	2	2	2
FINS/INCH	13	13	17	17
CONDENSER FAN				
DIAMETER	24	24	24	24
CFM	3500	3500	3700	3700
CONDENSER FAN MOTOR				
HORSEPOWER	1/4	1/4	1/2	1/2
R.L. AMPS	1.5	1.5	1.5	1.5
L.R. AMPS	3.4	3.4	3.6	3.6
BLOWER MOTOR				
HORSEPOWER	3/4	3/4	3/4	3/4
R.L. AMPS	5	5	5	5
L.R. AMPS	Protected by redundant electronic control circuits			
BLOWER WHEEL WxD	10x10	10x10	10x10	10x10
RATED CFM, COOLING	1450	1450	1700	1700
MAX. EXT. STATIC PRESS	0.8" w c	0.8" w c	0.8" w c	0.8" w c
EVAPORATOR COIL				
FACE AREA SQ. FT	5.7	5.7	5.7	5.7
ROW DEEP	2	2	3	3
FINS / INCH	15	15	15	15
EXT. FILTER SIZE SQ. FT.	5.3	5.3	5.3	5.3
DRAIN LINE SIZE	3/4	3/4	3/4	3/4
REF. EXP. DEVICE, CLG	Capillary	Capillary	TEV	TEV
REFRIGERANT CHARGE	119.8 oz.	119.8 oz.	135.2 oz.	135.2 oz.
POWER SUPPLY**	208/230-60-1	208/230-60-1	208/230-60-1	208/230-60-1
MIN.CIRCUIT AMPACITY	34	34	39.5	39.5
MAX OVERCURRENT DEVICE	50	50	50	50
ELECT. ENTRANCE SIZE				
POWER SUPPLY	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2	1 1/4, 1 1/2, 2
LOW VOLTAGE	7/8"	7/8"	7/8"	7/8"
APPROX. SHIPPING WT	521	527	526	526

** **IMPORANT:** While this data is presented as a guide, it is important to electrically connect the unit and properly size wires and fuses/circuit breakers in accordance with the National Electrical Code and/or all local codes.

PRODUCT DESIGN

Amana Package Units are designed for outdoor installations only in either residential or light commercial applications.

The connecting ductwork (Supply and Return) can be connected for either horizontal or vertical airflow. In the vertical application a matching Roof Curb is recommended and this is the only position that the optional Economizer may be used.

A return air filter must be installed behind the return air grille(s) or provision must be made for a filter in an accessible location within the return air duct. Later production models have provisions for an internal field installed filter. Refer to the model nomenclature section to identify these models.

The minimum filter area should not be less than those sizes listed in the Specification Section. Under no circumstances should the unit be operated without return air filters.

A 3/4" FPT fitting is provided on the front of the basepan for removal of condensate water from the indoor coil. In order to provide proper condensate flow, a drain must be connected and properly trapped. (Do not reduce the drain line size).

Refrigerant flow control is achieved by use of capillary tubes on the Package Cooling (PCA /SPCO) and Package Gas (PGA/PGB/PGC/SPCG) Units in the 24 through 42 MBTUH sizes. The 48 and 60 MBTUH models use a thermostatic expansion valve (TXV) to control refrigerant flow.

Package Heat Pump models use a combination of restrictor orifices and thermostatic expansion valves for refrigerant flow control.

The 30 and 42 MBTUH models use a restrictor orifice for both cooling and heating. The 24 and 36 MBTUH models use a restrictor for cooling and a TXV for heating. And the 48 and 60 MBTUH models use a TXV for cooling and a restrictor orifice for heating.

Heat pump models also have a suction line accumulator installed between the reversing valve and the compressor. The object of the accumulator is to:

1. Provide a liquid refrigerant storage vessel during prolonged system off cycles.
2. Store excess liquid refrigerant not needed by the system while running.
3. Return to the compressor at a controlled rate oil and saturated vapor.
4. Retain stored excess refrigerant during a sudden system pressure fluctuation such as seen in defrost cycles.

The single phase units use permanent split capacitors (PSC) design compressors. Starting components are therefore not required except on the 4 and 5 ton models which use and TXV on the indoor coil. A low MFD run capacitor assists the compressor to start and remain in the circuit during operation.

The outdoor fan and indoor blower motors are single phase capacitor type motors on all but the 460 volt 3 phase, and PGC models. PGC models use a BPM (Brushless Permanent Magnet) or ECM motor on the indoor side.

Air for condensing (cooling cycle) or evaporation (heating cycle) is drawn through the outdoor coil by a propeller fan, and is discharged vertically out the top of the unit. The outdoor coil is designed for .0 static. No additional restriction (ductwork) shall be applied.

Conditioned air is drawn through the filter(s), field installed, across the coil and back into the conditioned space by the indoor blower.

An internal crankcase heater is installed in the compressor and must be energized at least four (4) hours prior to operating the compressor.

Package Cooling and Heat Pump indoor sections are designed to accept optional components such as auxiliary electric heaters and circuit breakers (460V heater kits are shipped with fuses). Provisions for these components have been made at time of manufacture.

PCB , and PGB models use the Compliant Scroll compressor, there are a number of design characteristics which are different from the traditional reciprocating compressor.

- Phase 1 Scroll compressors include a discharge thermostat located beneath the compressor top cap.
- Phase 2 Scroll compressors will not have a discharge thermostat.
- Due to their design Scroll compressors are inherently more tolerant of liquid refrigerant. NOTE: Even though the compressor section of a Scroll compressor is more tolerant of liquid refrigerant, continued floodback or flooded start conditions may wash oil from the bearing surfaces causing premature bearing failure.
- These Scroll compressors use white oil which is compatible with 3GS. 3GS oil may be used if additional oil is required.
- The compressor may run backwards (noisy operation) for 1 or 2 seconds at shutdown. This is normal and does not harm the compressor.
- Operating pressures and amp draws may differ from standard reciprocating compressors. This information may be found in the "Cooling Performance Data" section.
- The 3 phase Scroll Compressors are direction of rotation sensitive. It will rotate in either direction depending on the phasing of the power. Verification of proper rotation is made as follows.

1. Install gauges and verify that the suction pressure drops while the discharge pressure increases.
2. Listen for normal compressor sound levels. Reverse rotation results in elevated or unusual sound levels.

3. Reverse rotation will result in substantially reduced amp draw from tabulated values.

To correct improper rotation, switch any two power supply leads at the outdoor unit contactor.

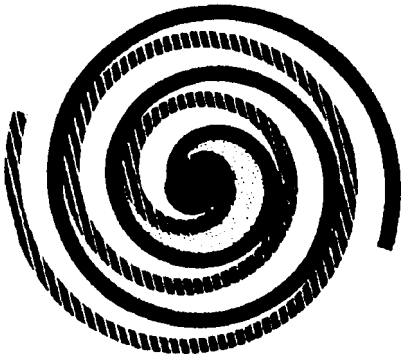
There is no negative impact on durability caused by operating 3 phase compressors in reversed rotation. The compressors internal protector will trip de-energizing the compressor.

The scroll is a simple compression concept first patented in 1905. A scroll is an involute spiral which, when matched with a mating scroll form as shown below, generates a series of crescent shaped gas pockets between the two members.

During compression, one scroll remains stationary (fixed scroll) while the other form (orbiting scroll) is allowed to orbit (but not rotate) around the first form.

As this motion occurs, the pockets between the two forms are slowly pushed to the center of the two scrolls while simultaneously being reduced in volume. When the pocket reaches the center of the scroll form, the gas, which is now at a high pressure, is discharged out of a port located at the center.

During compression, several pockets are being compressed simultaneously, resulting in a very smooth process. Both the suction process (outer portion of the scroll members) and the discharge process (inner portion) are continuous.



ELECTRICAL WIRING

⚠ WARNING

TO AVOID THE RISK OF ELECTRICAL SHOCK, WIRING TO THE UNIT MUST BE PROPERLY POLARIZED AND GROUNDED.

⚠ WARNING

TO AVOID ELECTRICAL SHOCK, INJURY OR DEATH, DISCONNECT ELECTRICAL POWER BEFORE CHANGING ANY ELECTRICAL WIRING.

The units are designed for operation on 60 hertz current and at voltages as shown on the rating plate. All internal wiring in the unit is complete. It is necessary to bring in the power supply to the pigtails or power block, which is located in the junction box or circuit breaker box assembly (or compressor contactor on package gas units) ,as shown on the unit wiring diagram which is supplied with the unit. The 24V wiring must be connected between the unit control panel and the room thermostat.

LINE VOLTAGE WIRING

Power supply to the furnace must be N.E.C. Class 1, and must comply with all applicable codes. The furnace must be electrically grounded in accordance with the local codes or, in their absence, with the latest edition of the National Electrical Code, ANSI/NFPA No. 70, or in Canada, Canadian Electrical Code, C22.1, Part 1. A fused disconnected must be provided and sized in accordance with the unit minimum circuit ampacity.

The best protection for the wiring is the smallest fuse or breaker which will hold the equipment on line during normal operation without nuisance trips. Such a device will provide maximum circuit protection. DO NOT EXCEED THE MAXIMUM OVERCURRENT DEVICE SIZE SHOWN ON THE UNIT DATA PLATE.

All line voltage connections must be made through weather proof fittings. All exterior power supply and ground wiring must be in approved weather proof conduit. Low voltage wiring from the unit control panel to the thermostat requires coded cable. Unit knock out sizes are shown in the specification tables.

The unit transformer is connected for 230V operation. If the unit is to operate on 208V, reconnect the transformer primary lead and the induced draft blower leads as shown on the unit wiring diagram.

⚠ WARNING

TO AVOID THE RISK OF FIRE, PROPERTY DAMAGE OR PERSONAL INJURY, USE ONLY COPPER CONDUCTORS.

If it is necessary for the installer to supply additional line voltage wiring to the inside of the furnace, the wiring must comply with all local codes. This wiring must have a minimum temperature rating of 105°C. and must be routed away from the burner compartment. All line voltage splices must be made inside the furnace junction box.

PRODUCT DESIGN

GAS SUPPLY AND PIPING

Package Gas Units

⚠ CAUTION

THIS FURNACE IS FACTORY SET TO OPERATE ON NATURAL GAS AT THE ALTITUDES SHOWN ON THE RATING PLATE. IF OPERATION AT HIGHER ALTITUDES AND OR ON PROPANE IS REQUIRED, OBTAIN AND INSTALL THE PROPER CONVERSION KIT(S) BEFORE OPERATING THIS FURNACE. FAILURE TO DO SO MAY RESULT IN UNSATISFACTORY OPERATION AND OR EQUIPMENT DAMAGE. (HIGH ALTITUDE KITS ARE FOR U.S. INSTALLATIONS ONLY.)

The rating plate is stamped with the model number, type of gas, and gas input rating. Make sure the furnace is equipped to operate on the type of gas available.

INLET GAS PRESSURE	
NATURAL	MIN. 5.0", MAX. 10.0"
PROPANE	MIN. 11.0", MAX. 14.0"

Inlet Gas Pressure Must Not Exceed the Maximum Value Shown in Table Above.

The minimum supply pressure must not be varied downward because this could lead to unreliable ignition. In addition, gas input to the burners must not exceed the rated input shown on the rating plate. Overfiring of the furnace could result in premature heat exchanger failure.

HIGH ALTITUDE DERATE

(United States Installations Only)

When this furnace is installed at altitudes above 2,000 feet the furnace input must be derated 4% for each 1,000 feet above sea level because the density of the air is reduced.

In some areas the gas supplier will derate the gas at a rate of 4% for each 1,000 feet above sea level. If he does not do so, smaller orifices will be required at altitudes above 3,500 feet (non-derated natural gas) or 4,500 feet (non-derated propane).

A different pressure switch is required at altitudes more than 4,000 feet above sea level. This is required regardless of the heat content of the fuel used.

High altitude kits can be purchased depending upon the altitude and type of fuel used. Refer to the High Altitude Instruction Manual included with this furnace to determine which High Altitude Components to use and also for Detailed Installation Instructions.

Adjustment of the manifold pressure to a lower pressure reading than what is specified on the furnace nameplate is not a proper derate procedure. With a lower density of air and a lower manifold pressure at the burner orifice, the orifice will not aspirate the proper amount of air into the burner. This can cause incomplete combustion of the gas, flash back, and possible yellow tipping.

GAS PIPING

⚠ CAUTION

TO AVOID POSSIBLE UNSATISFACTORY OPERATION OR EQUIPMENT DAMAGE DUE TO UNDERFIRING OF EQUIPMENT, DO NOT UNDERSIZE THE NATURAL GAS /PROPANE PIPING FROM THE METER/TANK TO THE FURNACE. WHEN SIZING A TRUNK LINE PER THE TABLES, INCLUDE ALL APPLIANCES ON THAT LINE THAT COULD BE OPERATED SIMULTANEOUSLY.

The gas pipe supplying the furnace must be properly sized based on the cubic feet per hour of gas flow required, specific gravity of the gas and length of the run. The gas line installation must comply with local codes, or in the absence of local codes, with the latest edition of the National Fuel Gas Code ANSI Z223.1.

NATURAL GAS CAPACITY OF PIPE IN CUBIC FEET OF GAS PER HOUR (CFH)

LENGTH OF PIPE IN FEET	NOMINAL BLACK PIPE SIZE				
	1/2"	3/4"	1"	1 1/4"	1 1/2"
10	132	278	520	1050	1600
20	92	190	350	730	1100
30	73	152	285	590	980
40	63	130	245	500	760
50	56	115	215	440	670
60	50	105	195	400	610
70	46	96	180	370	560
80	43	90	170	350	530
90	40	84	160	320	490
100	38	79	150	305	460

$$CFH = \frac{\text{BTUH FURNACE INPUT}}{\text{CALORIFIC VALUE OF GAS}}$$

CONNECTING THE GAS PIPING - NATURAL GAS

Refer to the figure below for the general layout of the furnace. The following rules apply:

1. Use black iron or steel pipe and fittings for the building piping.
2. Use pipe joint compound on male threads only. Pipe joint compound must be resistant to the action of the fuel used.

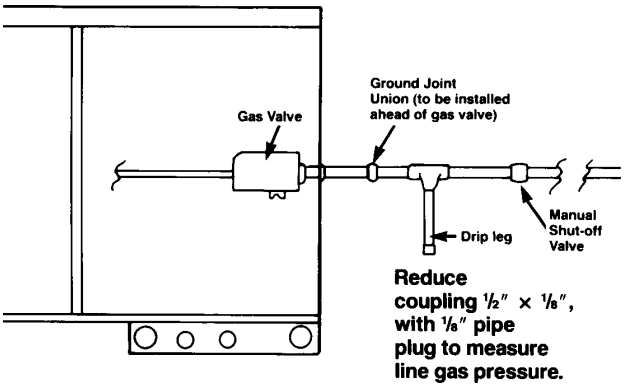
3. Use ground joint unions.
4. Install a drip leg to trap dirt and moisture before it can enter the gas valve. The drip leg must be a minimum of three inches long.
5. Use two pipe wrenches when making connection to the gas valve to keep it from turning.
6. Install a manual shut off valve. This shut off valve should be conveniently located within six (6) feet of the unit, and between the meter and unit.
7. Tighten all joints securely.
8. The furnace shall be connected to the building piping by one of the following.

   a. Rigid metallic pipe and fittings.

   b. Semirigid metallic tubing and metallic fittings. Aluminum alloy tubing shall not be used in exterior locations.

   c. Listed gas appliance connectors used in accordance with the terms of their listing that are completely in the same room as the equipment.

   d. In "b" and "c" above, the connector or tubing shall be installed so as to be protected against physical and thermal damage. Aluminum-alloy tubing and connectors shall be coated to protect against external corrosion where they are in contact with masonry, plaster, or insulation or are subject to repeated wettings by such liquids as water (except rain water), detergents, or sewage.


Gas Valve
Ground Joint Union (to be installed ahead of gas valve)
Drip leg
Manual Shut-off Valve
Reduce coupling ½″ × ⅛″, with ⅛″ pipe plug to measure line gas pressure.

CHECKING THE GAS PIPING

CAUTION

TO AVOID THE POSSIBILITY OF PROPERTY DAMAGE, PERSONAL INJURY OR FIRE, THE FOLLOWING INSTRUCTIONS MUST BE PERFORMED REGARDING GAS CONNECTIONS AND PRESSURE TESTING.

The unit and its gas connections must be leak tested before placing in operation. Because of the danger of explosion or fire, never use a match or open flame to test for leaks. Never exceed specified pressure for testing. Higher pressure may damage the gas valve and cause overfiring which may result in heat exchanger failure.

This unit and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.48 kPa).

This unit must be isolated from the gas supply system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig (3.48 kPa).

TANKS AND PIPING - PROPANE UNITS

WARNING

PERSONAL INJURY HAZARD

IRON OXIDE (RUST) CAN REDUCE THE LEVEL OF ODORANT IN PROPANE GAS. A GAS DETECTING DEVICE IS THE ONLY RELIABLE METHOD TO DETECT A PROPANE GAS LEAK. CONTACT YOUR LOCAL PROPANE SUPPLIER ABOUT INSTALLING A GAS DETECTING WARNING DEVICE TO ALERT YOU IN THE EVENT THAT A GAS LEAK SHOULD DEVELOP.

FAILURE TO DETECT A PROPANE GAS LEAK COULD RESULT IN AN EXPLOSION OR FIRE WHICH COULD CAUSE SERIOUS PERSONAL INJURY OR DEATH.

All propane gas equipment must conform to the safety standards of the National Board of Fire Underwriters (See NBFU Manual 58) or Natural Standards of Canada B149.2, Installation Code for Propane Gas Burning Appliances and Equipment.

For satisfactory operation, propane gas pressure must be 10 inch W.C. at the furnace manifold with all gas appliances in operation. Maintaining proper gas pressure depends on three main factors.

1. Vaporization rate, which depends on (a) temperature of the liquid, and (b) "wetted surface" area of the container or containers.
2. Proper pressure regulation. (Two-stage regulation is recommended from the standpoint of both cost and efficiency.)
3. Pressure drop in lines between regulators, and between second stage regulator and the appliance. Pipe size required will depend on length of pipe run and total load of all appliances.

PRODUCT DESIGN

Complete information regarding tank sizing for vaporization, recommended regulator settings, and pipe sizing is available from most regulator manufacturers and propane gas suppliers.

Propane is an excellent solvent, and special pipe dope must be used when assembling piping for this gas as it will quickly dissolve white lead or most standard commercial compounds. Shellac base compounds resistant to the actions of liquefied petroleum gases such as Gasolac, Stalactic, Clyde's or John Crane are satisfactory.

Refer to Figure 13 for typical propane gas installations.

TYPICAL PROPANE PIPING

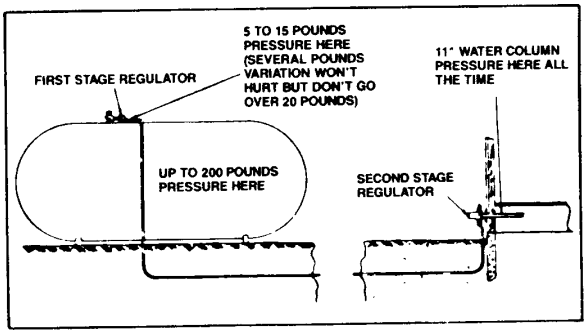

5 TO 15 POUNDS PRESSURE HERE (SEVERAL POUNDS VARIATION WON'T HURT BUT DON'T GO OVER 20 POUNDS)
11" WATER COLUMN PRESSURE HERE ALL THE TIME
FIRST STAGE REGULATOR
UP TO 200 POUNDS PRESSURE HERE
SECOND STAGE REGULATOR

Figure 13

⚠ WARNING

IF YOUR PROPANE GAS FURNACE IS INSTALLED IN A BASEMENT, AN EXCAVATED AREA OR A CONFINED SPACE, WE STRONGLY RECOMMEND THAT YOU CONTACT YOUR PROPANE SUPPLIER ABOUT INSTALLING A WARNING DEVICE THAT WOULD ALERT YOU TO A GAS LEAK.

..... Propane gas is heavier than air and any leaking gas can settle in any low areas or confined spaces.

..... Propane gas odorant may fade, making the gas undetectable except with a warning device.

An undetected gas leak would create a danger of explosion or fire. If you suspect the presence of gas, follow the instructions on Page 6. Failure to do so could result in SERIOUS PERSONAL INJURY OR DEATH.

PROPANE PIPING CHARTS

Sizing Between First and Second Stage Regulator

Maximum Propane Capacities listed are based on 2 PSIG Pressure Drop at 10 PSIG Setting. Capacities in 1000 BTU/HR

PIPE OR TUBING LENGTH, FEET	TUBING SIZE, O.D., TYPE L					NOMINAL PIPE SIZE, SCH 40	
	3/8"	1/2"	5/8"	3/4"	7/8"	1/2"	3/4"
10	730	1700	3200	5300	8300	3200	7500
20	500	1100	2200	3700	5800	2200	4200
30	400	920	2000	2900	4700	1800	4000
40	370	850	1700	2700	4100	1600	3700
50	330	770	1500	2400	3700	1500	3400
60	300	700	1300	2200	3300	1300	3100
80	260	610	1200	1900	2900	1200	2600
100	220	540	1000	1700	2600	1000	2300
125	200	490	900	1400	2300	900	2100
150	190	430	830	1300	2100	830	1900
175	170	400	780	1200	1900	770	1700
200	160	380	730	1100	1800	720	1500

To Convert to Capacities at 15 PSIG Settings -- Multiply by 1.130
To Convert to Capacities at 5 PSIG Settings -- Multiply by 0.879

Sizing Between Single or Second Stage Regulator and Appliance

Maximum Propane Capacities listed are based on 1/2" W.C. Pressure Drop at 11" W.C. Setting. Capacities in 1000 BTU/HR

PIPE OR TUBING LENGTH FEET	TUBING SIZE, O.D., TYPE L						NOMINAL PIPE SIZE, SCH 40				
	3/8"	1/2"	5/8"	3/4"	7/8"	1 7/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"
10	39	92	199	329	501	935	275	567	1071	2205	3307
20	26	62	131	216	346	630	189	393	732	1496	2299
30	21	50	107	181	277	500	152	315	590	1212	1858
40	19	41	90	145	233	427	129	267	504	1039	1559
50	18	37	79	131	198	376	114	237	448	913	1417
60	16	35	72	121	187	340	103	217	409	834	1275
80	13	29	62	104	155	289	89	185	346	724	1086
100	11	26	55	90	138	255	78	162	307	630	976
125	10	24	48	81	122	224	69	146	275	567	866
150	9	21	43	72	109	202	63	132	252	511	787
200	8	19	39	66	100	187	54	112	209	439	665
250	8	17	36	60	93	172	48	100	185	390	590

*DATA IN ACCORDANCE WITH NFPA PAMPHLET NO. 54

PROPANE TANK SIZING (MINIMUM)

MAXIMUM GAS NEEDED TO VAPORIZE*	TANK SIZE REQUIRED IF LOWEST OUTDOOR TEMPERATURE (AVG. FOR 24 HOURS) REACHES						
	32°F	20°F	10°F	0°F	-10°F	-20°F	-30°F
125K BTU/HR (50 CFH)	115 GAL	115 GAL	115 GAL	250 GAL	250 GAL	400 GAL	600 GAL
250K BTU/HR (100 CFH)	250 GAL	250 GAL	250 GAL	400 GAL	500 GAL	1000 GAL	1500 GAL
375K BTU/HR (150 CFH)	300 GAL	400 GAL	500 GAL	500 GAL	1000 GAL	1500 GAL	2500 GAL
500K BTU/HR (200 CFH)	400 GAL	500 GAL	750 GAL	1000 GAL	1500 GAL	2000 GAL	3500 GAL
750K BTU/HR (300 CFH)	750 GAL	1000 GAL	1500 GAL	2000 GAL	2500 GAL	4000 GAL	5000 GAL

* AVERAGE RATE/HOUR WITHDRAWL IN 8 HOUR PERIOD

SYSTEM OPERATION

COOLING

The refrigerant used in the system is R-22. It is clear, colorless, non-toxic, non-irritating, and non-explosive liquid. The chemical formula is $CHCLF_2$. The boiling point, at atmospheric pressure is -41.4°F.

A few of the important principles that make the refrigeration cycle possible are: heat always flows from a warmer to a cooler body, under lower pressure a refrigerant will absorb heat and vaporize at a low temperature, the vapors may be drawn off and condensed at a higher pressure and temperature to be used again.

The indoor evaporator coil functions to cool and dehumidify the air conditioned spaces through the evaporative process taking place within the coil tubes.

NOTE: The pressures and temperatures shown are for demonstration purposes only. Actual temperatures and pressures are to be obtained from the "Cooling Performance Chart."

High temperature, high pressure vapor leaves the compressor through the discharge line, through the reversing valve on heat pump models, and enters the condenser coil. Air drawn through the condenser coil by the condenser fan causes the refrigerant to condense into a liquid by removing heat from the refrigerant. As the refrigerant is cooled below its condensing temperature it becomes subcooled.

The subcooled high pressure liquid refrigerant now leaves the condenser coil via the liquid line until it reaches the indoor expansion device. (Heat pump models will also have an outdoor expansion valve/check valve assembly or a restrictor orifice installed in the liquid line).

As the refrigerant passes through the expansion device and into the evaporator coil a pressure drop is experienced causing the refrigerant to become a low pressure vapor. Low pressure saturated refrigerant enters the evaporator coil where heat is absorbed from the warm air drawn across the coil by the evaporator blower. As the refrigerant passes through the last tubes of the evaporator coil it becomes superheated, that is, it absorbs more heat than is necessary for the refrigerant to vaporize. Maintaining proper superheat assures that liquid refrigerant is not returning to the compressor which can lead to early compressor failure.

Low pressure superheated vapor leaves the evaporator coil and returns through the suction line to the compressor where the cycle begins again. On heat pump models the refrigerant must travel through the reversing valve and accumulator before returning to the compressor.

For those installations using vertical indoor air discharge, an optional Economizer is available for First Stage Cooling.

HEATING - Heat Pump Models

The heating portion of the refrigeration cycle is similar to the cooling cycle. By energizing the reversing valve solenoid coil, the flow of the refrigerant is reversed. The indoor coil now becomes the condenser coil and the outdoor coil becomes the evaporator coil.

The restrictor orifice or check valve at the indoor coil will open by the flow of refrigerant letting the now condensed liquid refrigerant bypass the indoor expansion device. The orifice or check valve at the outdoor coil will be forced closed by the refrigerant flow, thereby utilizing the outdoor expansion device.

COOLING CYCLE

All Models

When the contacts of the room thermostat close making terminals R to Y to G, the low voltage circuit of the transformer is completed. A current now flows through the magnetic holding coils of the compressor contactor (CC) and the indoor blower time delay relay (BD1).

This draws in the normally open compressor contactor (CC) and the indoor blower relay (BD1) which is wired in series with the motors in the line voltage circuit, starting the compressor and condenser fan motors. At the same time contacts BD1 close starting the indoor fan motor.

When the thermostat is satisfied, it opens its contacts, breaking the low voltage circuit, causing the compressor contactor and indoor fan relay to open, stopping the system.

If the room thermostat fan selector switch should be set on the "on" position then the indoor blower would run continuous rather than cycling with the compressor.

HEATING CYCLE

Package Heat Pumps

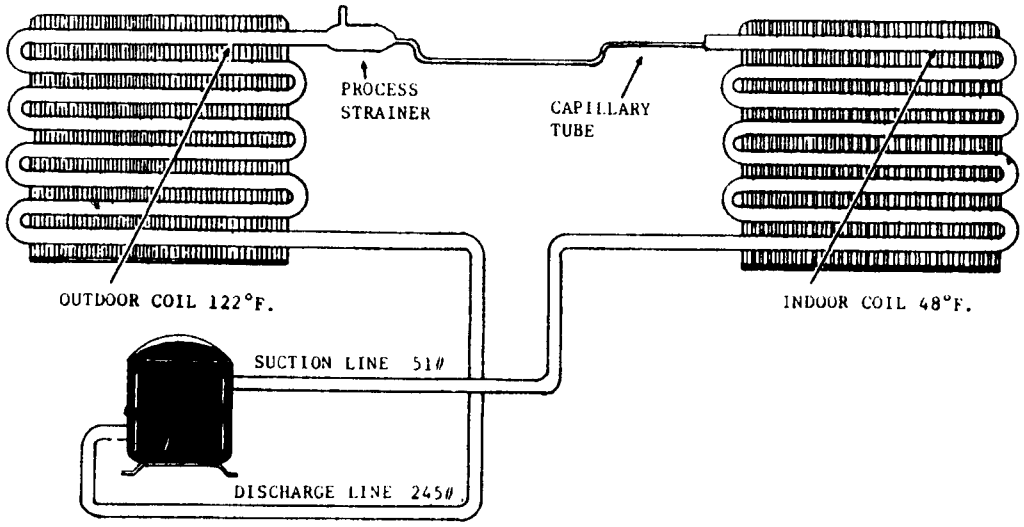
When the thermostat calls for heat, making terminals R to W, the low voltage circuit of the transformer is completed. Current now flows through the magnetic holding coil of the reversing relay (RR).

This draws in the normally open contacts of the relay, RR1 and RR2. The closing of the RR2 contacts completes the control circuit through the compressor contactor (CC), starting the compressor and outdoor fan motor. This also energizes the indoor blower relay (BD1) back through the room thermostat, starting the indoor blower motor.

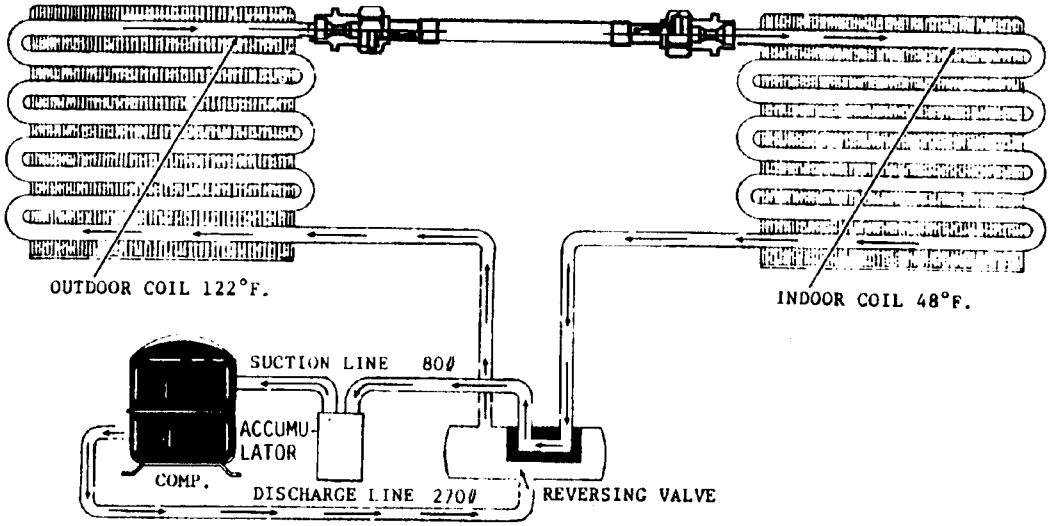
The closing of contacts RR1 energizes the reversing valve solenoid, causing it to switch to the heating position, diverting hot gas to the coil of the indoor unit.

When auxiliary electric heaters are used, a two stage heating single stage cooling thermostat would be installed.

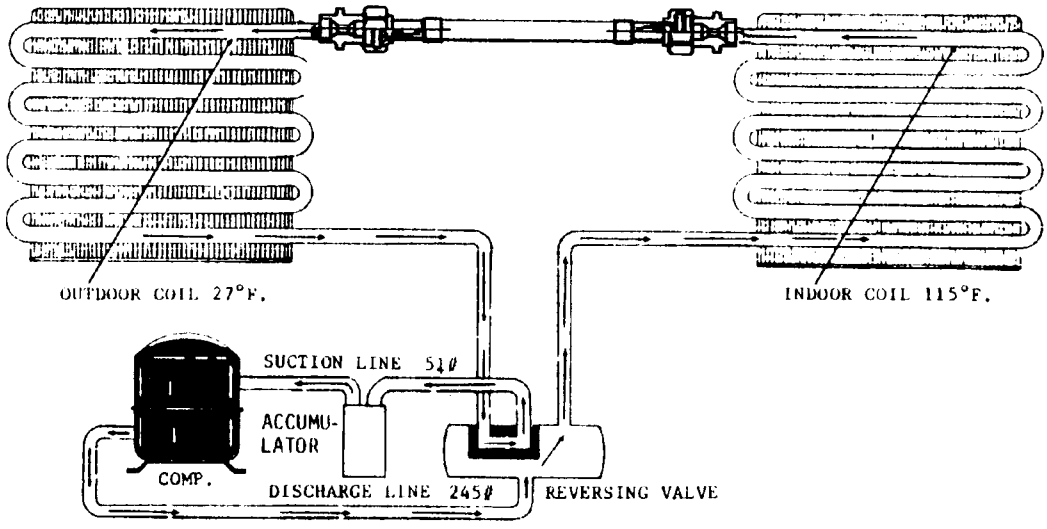
SYSTEM OPERATION



Package Cooling and Package Gas Units



Package Heat Pump Cooling Cycle



Package Heat Pump Heating Cycle

Should the second stage heating contacts in the room thermostat close, which would be wired to W1 at the unit control panel, this would energize the holding coil of the time delay relay (TD1). After the delay period, contacts within the relay will close, bringing on the resistance heaters. Depending on the unit involved and the number of heaters installed, the relay fan heater holding coil (RF1) will also be energized to change the indoor motor speed if required.

If additional electric heaters should be used, they would be controlled by outdoor thermostats.

NOTE: Refer to the supplications section for the maximum heaters that may be installed for a specific unit.

DEFROST CYCLE

Package Heat Pumps

The defrosting of the outdoor coil is jointly controlled by the defrost timer board, defrost (30/60) control and compressor run time.

Solid State Timer

The defrost timer board can be connected for one of three (3) time intervals. Post T1 = 30 minutes, Post T2 = 60 minutes, and Post T3 = 90 minutes (Factory connected).

The timing interval can not begin until the outdoor coil temperature reaches approximately 30°F. (initiation temperature) at the defrost (30/60) control point of contact. As long as this point of contact does not reach 60°F. (termination temperature) the defrost timer board will count the number of minutes that the compressor runs. The compressor may run continuous or cycle depending on its installation design.

At the end of this (one of three) time interval, the defrost timer board will call for defrost and energize the defrost (DFR) relay. This relay has two sets of contacts of which one is in the line voltage circuit (normally closed) in series with the outdoor fan motor and reversing valve solenoid coil. When this contact opens, the outdoor fan motor stops and the reversing valve changes to the cooling position sending hot refrigerant gas to the outdoor coil, which will start to melt any frost accumulation. The other set of contacts (normally open) are in the low voltage circuit and could (depending on how wired) energize electric resistance strip heaters.

The defrost timer board will keep the defrost (DFR) relay energized until the outdoor coil temperature reaches approximately 60°F. at the point of contact with the defrost (30/60 control or a maximum of 10 minutes compressor run time.

If the defrost cycle is terminated by temperature, then a new time interval count can not begin until the defrost (30/60) control again reaches approximately 30°F. at the point of contact. If the defrost cycle was terminated by time, then a new time interval could would begin immediately.

HEATING CYCLE

Package Gas Units

The heating cycle is accomplished by using a unique tubular design heat exchanger which provides efficient gas heating on either natural gas or propane fuels. The heat exchangers compact tubular construction provides excellent heat transfer for maximum operating efficiency.

Inshot type gas burners with integral cross lighters are used eliminating the need for adjustable air shutters. The same burner is designed for use on either natural or propane fuels.

The Induced Draft blower draws fuel and combustion air into the burners and heat exchanger for proper combustion. A pressure switch is used in conjunction with the I. D. blower to detect a blocked flue condition.

Blower operation is controlled by a helical type combination Fan and Limit control mounted on the furnace firewall.

Ignition is provided by an electronic ignition control and ceramic glow bar ignitor which heats to approximately 2500°F. A flame sensor then monitors for the presence of flame and closes the gas valve if flame is lost.

The system may be controlled by most good heating and cooling thermostats with an adjustable heat anticipator. Some night setback thermostats that do not have a common terminal, use a power robbing circuit in the off cycle to maintain the batteries. This type of thermostat will interfere with the operation of the ignition control and should not be used.

NORMAL SEQUENCE OF OPERATION

1. Thermostat calls for heat. The combustion blower is immediately energized.
2. The pressure switch contacts transfer.
3. The ignitor is energized and is allowed to preheat for 38 seconds.
4. The gas valve is energized, delivering gas to the burners and starting combustion.
5. Four seconds after the gas valve is energized the ignitor is de-energized. Seven seconds after the gas valve is energized, the control checks the signal from the flame sensor. Gas flow will continue only if a proper signal is present.

SYSTEM OPERATION

6. The unit will continue to fire while the helical fan control heats up. The fan control will start the main circulating air blower approximately 75 seconds after the gas valve opens (this time may vary depending upon the control setting).
7. The furnace will deliver heat to the conditioned space until the thermostat is satisfied.
8. The gas valve and combustion blower will be de-energized when the thermostat opens.
9. There is a 90 second delay (approximate) before the main air circulation blower will stop. This allows any additional heat in the heat exchanger to be transferred to the conditioned space and to purge combustion products for the heat exchanger and vent system.

In the event combustion was not proven as in step 5, the gas valve is de-energized and the ignition control will attempt a "retry" after a 38 second wait period. If this ignition attempt is unsuccessful, one more retry will be made before lockout.

If flame is established for more than ten (10) seconds after ignition, the control will clear the ignition attempt (or retry) counter. If flame is lost after ten (10) seconds, the gas valve will de-energize within .8 seconds and the control will restart the ignition sequence.

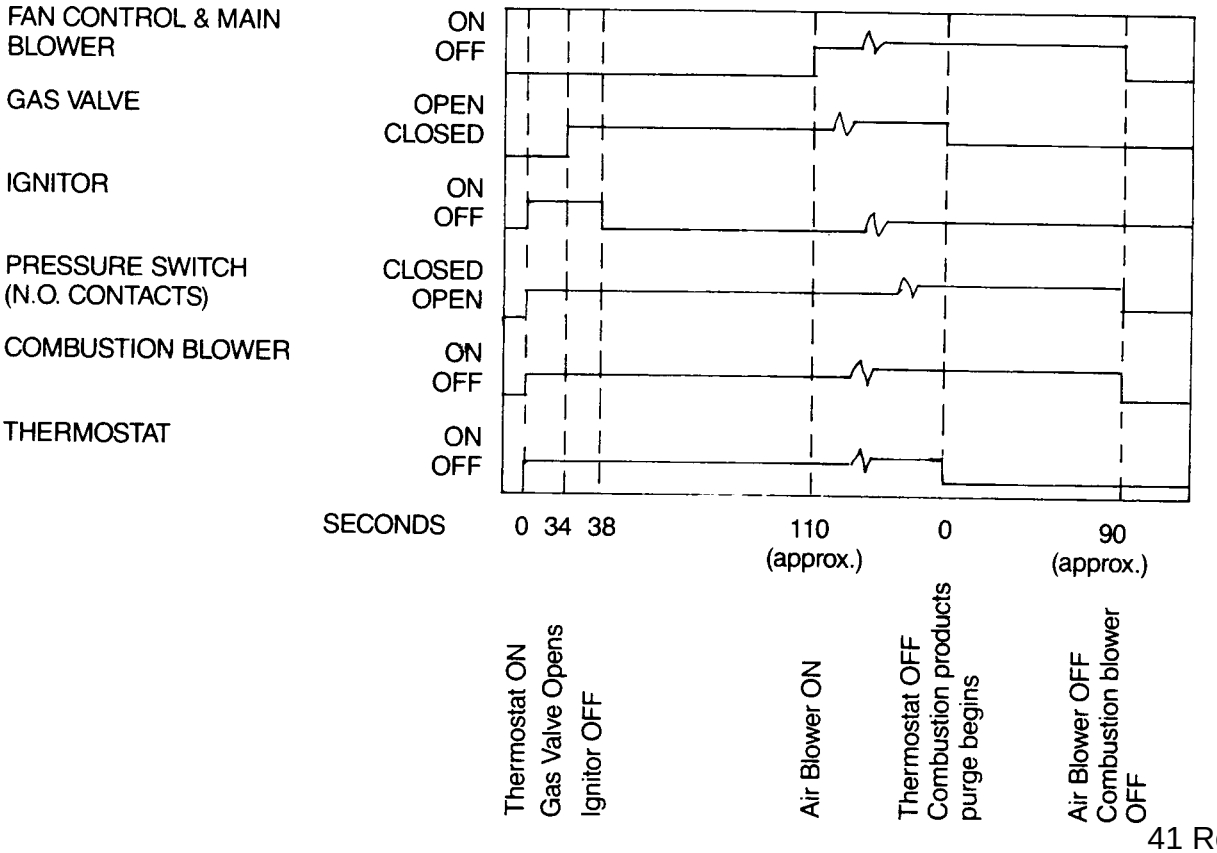
The ignition control will repeat the ignition sequence for a total of three (3) retries if flame is lost within the first 10 seconds. The total number of ignition retries plus the number of recycles cannot exceed eight (8).

RESET AFTER CONTROL LOCK-OUT

If ignition has not been achieved for any reason after three ignition cycles, the electronic control module will lock-out the furnace. A lock-out causes the air circulation blower to run continuously, and ignition is no longer attempted. When this occurs, it may be necessary to reset the control by turning the thermostat setting below room temperature for several seconds and then returning the setting to the desired temperature. The control may also be reset after a lock-out by turning off the electrical disconnect switch to the furnace for several seconds.

IMPORTANT: If the furnace frequently has to be reset, it means that a problem exists that should be corrected.

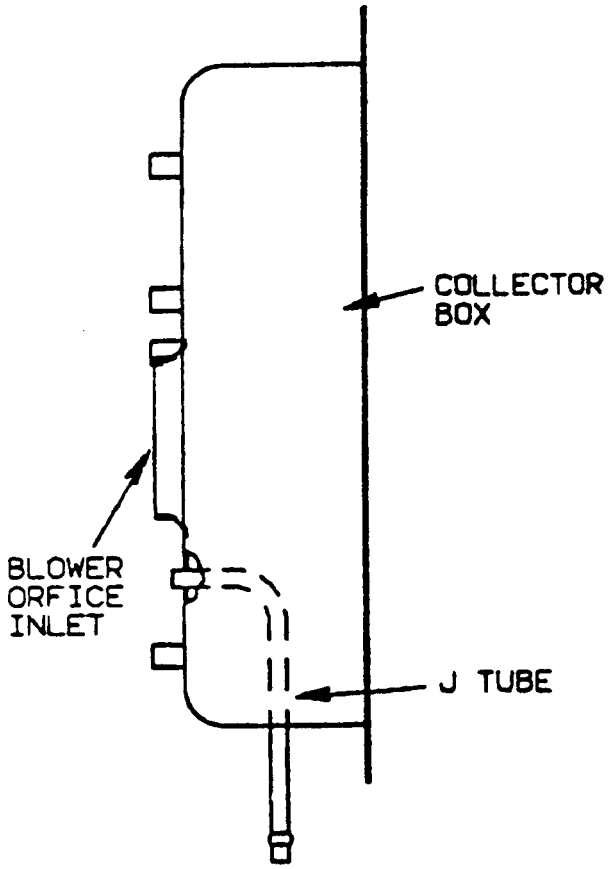
TIMING CHART FOR NORMAL ROBERTSHAW HS780 OPERATION



SYSTEM OPERATION

HEATING CYCLE

In order to illustrate the heating sequence using an induced draft blower motor, the following has been simplified to give a better understanding of the pressure switch operation.



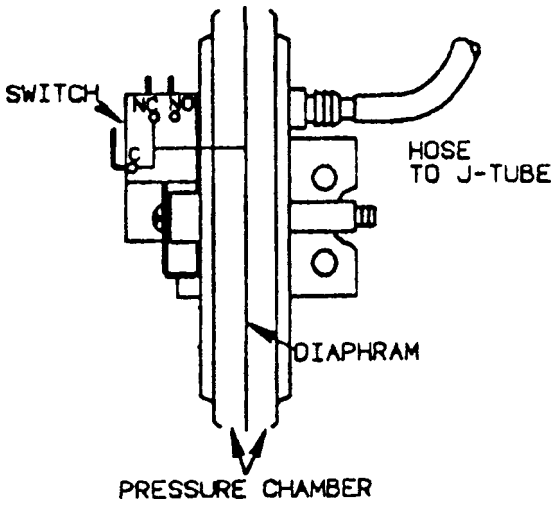
NOTE: J-tube must protrude 1/8" for proper negative reading to be obtained.

The first illustration is an end view of the collector box with J-tube. This box is mounted on the front of the Heat Exchanger with its flue passages terminating into the collector box.

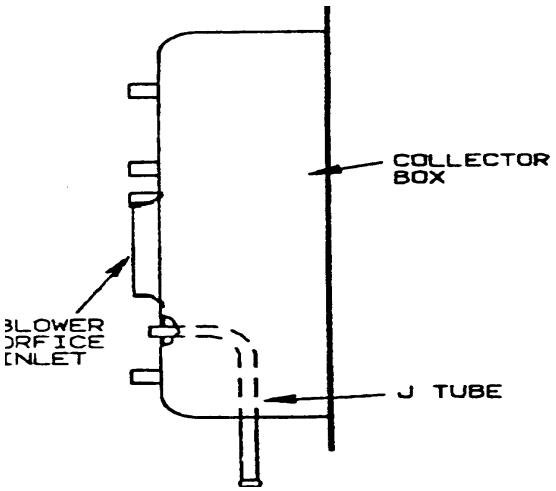
The J-tube has a predetermined orifice size for reading static pressures. The induced draft blower motor assembly is mounted to the collector box so the blower orifice inlet is the inlet to the blower wheel. When the motor is in operation, a negative pressure will be created on the J-tube, collector box and heat exchanger flue passages.

A pressure control using a single pole, double throw electrical switch is used as a safety requirement in case of a blocked flue.

The following illustrates the pressure control in an off and on position.



With the furnace in the off position the induced draft blower motor will not be running. Atmospheric pressure will therefore be on both sides of the diaphragm and the electrical switch will be made between (C) common and (NC) normally closed terminals.



When the induced draft blower motor is in operation, the J-tube hose will create a negative pressure on one side of the diaphragm and atmospheric pressure will be on the other side causing the diaphragm to move toward the negative pressure.

This in turn will open the (NC) normally closed switch and make the (C) common to the (NO) normally open terminals.

In the event of partially restricted or blocked flue the induced draft blower will create less negative pressure and at approximately -.65" $\pm$.06 W.C. negative pressure would open the contacts (C) to (NO).

SYSTEM OPERATION

OPERATING INSTRUCTIONS

1. Close the manual gas valve external to the furnace.

2. Turn off the electrical power supply to the furnace.

3. Set room thermostat to lowest possible setting.

4. Remove the door on the front of the furnace.

5. This furnace is equipped with an ignition device which automatically lights the burner. Do not try to light burner by hand.

6. Turn the gas control valve clockwise ↷ to the "Off" position for either the White Rodgers 36-E gas valve (Figure 11B) or the Honeywell VR-8205 gas valve (Figure 11A). For the Robertshaw 7200 gas valve, push in and slide the lever to the "Off" position (Figure 11C). Do not force.

7. Wait five (5) minutes to clear out any gas, then smell for gas, including near the floor.

8. If you smell gas following the five (5) minute waiting period in Step 7, follow the instructions on Page 5. If you do not smell gas, then turn the gas control knob counterclockwise ↶ to the "On" position for either the White Rodgers 36-E gas valve (Figure 11B) or the Honeywell VR-8205 gas valve (Figure 11A). For the Robertshaw 7200 gas valve, push in and slide the lever to the "On" position (Figure 11C). Do not force.

NOTE: There is approximate 20 second delay between thermostat energizing and burner firing.

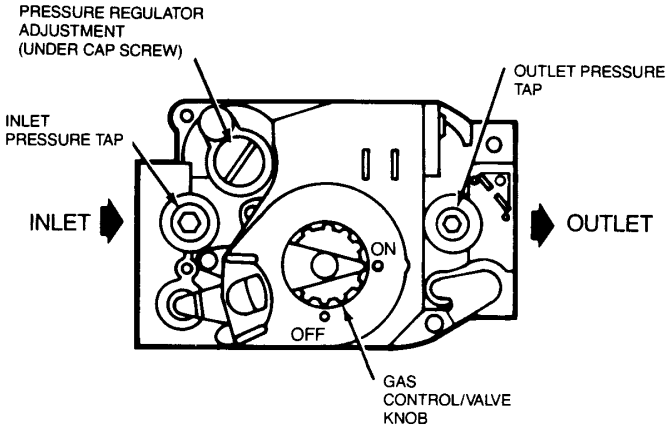


FIG. 11A — HONEYWELL MODEL: VR-8205

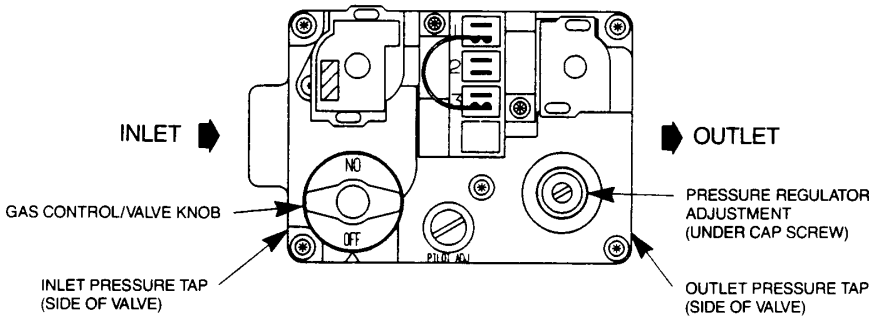


FIG. 11B — WHITE RODGERS MODEL: 36E36 TYPE 230

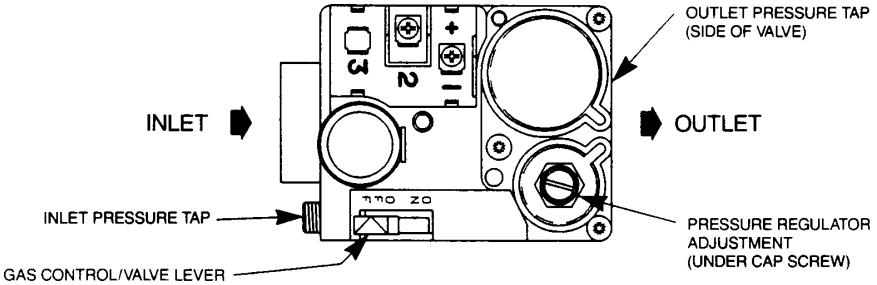


FIG. 11C — ROBERTSHAW (GRAYSON) MODEL: 7200

SYSTEM OPERATION

ELECTRIC HEATERS

Optional electric heaters may be added, in the quantities shown in the specifications section to provide electric resistance heating. Under no condition shall more heaters than the quantity shown be installed.

The low voltage circuit in the air handler is factory wired and terminates at the location provided for the electric heater(s). A minimum of field wiring is required to complete the installation.

Other components such as a Heating/Cooling Thermostat, Outdoor Thermostat, and Emergency Heat Relays are available to complete the installation.

The system CFM can be determined by measuring the static pressure external to the unit. The installation manual supplied with the blower coil shows the CFM for the static measured.

Alternately, the system CFM can be determined by operating the electric heaters and indoor blower WITHOUT having the compressor in operation. Measure the temperature rise as close to the blower inlet and outlet as possible.

If other than a 240V power supply is used, refer to the **BTUH CAPACITY CORRECTION FACTOR** chart below.

EXAMPLE: Five (5) heaters provide 24.0 KW at the rated 240V. Our actual measured voltage is 220V, and our measured temperature rise is 42°F. Find the actual CFM:

Answer: 24.0KW, 42°F Rise, 240 V = 1800 CFM from the **TEMPERATURE RISE** chart below.
Heating output at 220 V = 24.0 x 3.413 x .84 - 68.8 MBh.
Actual CFM = 1800 x .84 = 1400 CFM.

NOTE: The temperature rise tables is for sea level installations. The temperature rise at a particular KW and CFM will be greater at high altitudes, while the external static pressure at a particular CFM will be less.

FORMULAS:

Heating Output = KW x 3413 x Corr. Factor

Actual CFM = CFM (from table) x Corr. Factor

BTUH = KW x 3413

BTUH = CFM x 1.08 x Temperature Rise (DT)

$$CFM = \frac{KW \times 3413}{1.08 \times DT}$$

$$DT = \frac{BTUH}{CFM \times 1.08}$$

TEMPERATURE RISE (F°) @ 240V							
CFM	4.8 KW	7.2 KW	9.6 KW	14.4 KW	19.2 KW	24.0 KW	28.8 KW
600	25	38	51	-	-	-	-
700	22	33	43	-	-	-	-
800	19	29	38	57	-	-	-
900	17	26	34	51	-	-	-
1000	15	23	30	46	-	-	-
1100	14	21	27	41	55	-	-
1200	13	19	25	38	50	-	-
1300	12	18	23	35	46	-	-
1400	11	16	22	32	43	54	65
1500	10	15	20	30	40	50	60
1600	9	14	19	28	38	47	57
1700	9	14	18	27	36	44	53
1800	8	13	17	25	34	42	50
1900	8	12	16	24	32	40	48
2000	8	12	15	23	30	38	45
2100	7	11	14	22	29	36	43
2200	7	11	14	21	27	34	41
2300	7	10	13	20	26	33	39

BTUH CAPACITY CORRECTION FACTOR							
SUPPLY VOLTAGE	480	460	440	250	230	220	208
MULTIPLICATION FACTOR	1.09	1.00	.91	1.08	.92	.84	.75

ELECTRIC HEATER CAPACITY BTUH							
HTR KW	4.8 KW	7.2 KW	9.6 KW	14.4 KW	19.2 KW	24.0 KW	28.8 KW
BTUH	16380	24915	32765	49150	65530	81915	98295

SYSTEM OPERATION

SPCO(24, 30, 36)001A PCA24, 30, 36B0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY			MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
	24	30	36	24, 30, 36		
0	18.2	21.0	24.6	25, 30, 35	10	10
4.8	29.0	29.0	29.0	35	10	10
9.6	54.0	54.0	54.0	60	6	10
14.4	79.0	79.0	79.0	80	3	8
19.2	104.0	104.0	104.0	125	1	6

SPCO36003A PCA36B0003x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	17.9	25	10	10
4.8	29.0	30	10	10
9.6	47.0	50	6	10
14.4	47.0	50	6	10
19.2	69.9	70	4	8

SPCO42001A PCA42B0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	29.8	40	10	10
4.8	29.8	40	10	10
9.6	54.0	60	6	10
14.4	79.0	80	3	8
19.2	104.0	125	1	6

SPCO42003A PCA42B0003x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	20.5	25	10	10
4.8	29.0	30	10	10
9.6	47.0	50	6	10
14.4	47.0	50	6	10
19.2	69.7	70	4	8

SPCO48001A PCA48B0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	33.8	50	8	10
4.8	33.8	50	8	10
9.6	55.4	60	4	10
14.4	80.4	90	3	8
19.2	105.0	125	1	6
24.0	130.0	150	2/0	6
28.8	155.0	175	3/0	6

SPCO48003A PCA48B0003x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	24.0	30	10	10
4.8	30.4	35	8	10
9.6	48.0	50	6	10
14.4	48.0	50	6	10
19.2	71.2	80	3	8
24.0	91.3	100	2	8
28.8	91.3	100	2	8

SPCO60001A PCA60B0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	44.6	60	6	10
4.8	44.6	60	6	10
9.6	56.3	60	4	10
14.4	81.3	90	3	8
19.2	106.0	125	1	6
24.0	131.0	150	2/0	6
28.8	156.0	175	4/0	6

SPCO60003A PCA60B0003x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	31.1	40	8	10
4.8	31.3	40	8	10
9.6	49.0	50	6	10
14.4	49.0	50	6	10
19.2	72.1	80	3	8
24.0	92.1	100	2	8
28.8	92.1	100	2	8

SYSTEM OPERATION

PCB24, 30, 36x0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY			MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
	24	30	36	24, 30, 36		
0	18.2	21.0	26.9	25, 30, 35	10	10
4.8	29.0	29.0	29.0	35	10	10
9.6	54.0	54.0	54.0	60	6	10
14.4	79.0	79.0	79.0	80	3	8
19.2	104.0	104.0	104.0	125	1	6

PCB42x0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	29.3	40	10	10
4.8	29.3	40	10	10
9.6	54.0	60	6	10
14.4	79.0	80	3	8
19.2	104.0	125	1	6

PCB48x0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	33.1	50	8	10
4.8	33.1	50	8	10
9.6	55.4	60	4	10
14.4	80.4	90	3	8
19.2	105.0	125	1	6
24.0	130.0	150	2/0	6
28.8	155.0	175	3/0	6

PCB60x0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	43.5	60	6	10
4.8	43.5	60	6	10
9.6	56.3	60	4	10
14.4	81.3	90	3	8
19.2	106.0	125	1	6
24.0	131.0	150	2/0	6
28.8	156.0	175	3/0	6

PCA36B0004A

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	7.5	15	14	14
14.4	23.7	35	8	10

PCA48B0004A

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	11.4	15	14	14
14.4	25.3	35	8	10
28.8	47.9	70	4	8

PCA60B0004A

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	16.9	25	12	12
14.4	25.2	35	8	10
28.8	47.8	70	4	8

SYSTEM OPERATION

SPHO(24, 30, 36)001A PHA(24, 30, 36)0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY			MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
	24	30	36			
0	20.3	22.8	23.6	30	10	10
4.8	45.3	47.8	48.6	50	6	10
9.6	70.3	72.8	72.6	80	3	8
14.4	95.3	97.8	98.6	100	1	8
19.2	120.3	123.8	123.6	125	1	6

SPHO36003A PHA36B0003x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	17.8	25	12	10
4.8	42.8	45	6	10
9.6	61.0	70	4	8
14.4	61.0	70	4	8
19.2	84.9	90	3	8

SPHO42001A PHA42B0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	29.9	40	10	10
4.8	54.8	60	6	10
9.6	79.8	80	3	8
14.4	104.8	110	1	6
19.2	129.8	150	2/0	6

SPHO42003A PHA42B0003x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	20	25	12	10
4.8	45.5	50	6	10
9.6	63.8	70	4	8
14.4	63.8	70	4	8
19.2	86.6	90	2	8

SPHO48001A PHA48B0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	39.7	50	8	10
4.8	64.7	70	4	8
9.6	89.7	90	2	8
14.4	114.7	125	1/0	6
19.2	139.7	150	2/0	6
24.0	164.7	175	3/0	6
28.8	189.7	200	4/0	6

SPHO48003A PHA48B0003x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	28.7	40	10	10
4.8	53.7	60	6	10
9.6	71.9	80	3	8
14.4	71.9	80	3	8
19.2	94.8	100	2	8
24.0	115.3	125	1/0	6
28.8	115.3	125	1/0	6

SPHO60001A PHA60B0002x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	44.4	60	6	10
4.8	69.4	80	4	8
9.6	94.4	100	2	8
14.4	119.4	125	1/0	6
19.2	144.4	150	2/0	6
24.0	169.4	175	4/0	6
28.8	193.1	200	4/0	6

SPHO60003A PHA60B0003x

HEATER KW IN UNIT	TOTAL MIN CIR AMPACITY	MAX FUSE OR CKT BKR	SUPPLY (AWG)	GROUND (AWG)
0	29.6	40	10	10
4.8	54.6	60	6	10
9.6	72.9	80	3	8
14.4	72.9	80	3	8
19.2	95.8	100	1	8
24.0	116.3	125	1/0	6
28.8	116.3	125	1/0	6

BLOWER PERFORMANCE DATA

TOTAL EXTERNAL STATIC "W.C."	SPCO/PCA/PCB24		SPCO/PCA/PCB30		SPCO/PCA/PCB36		SPCO/PCA /PCB24&30	SPCO/PCA /PCB36	PCA36B0004A		
	LOW SPEED		MED SPEED		HIGH SPEED		HIGH SPEED	HIGH SPEED	HIGH SPEED		HIGH SPEED
	WET	DRY	WET	DRY	WET	DRY	DRY w/ PHK20A1	DRY w/ PHK20A1	WET	DRY	DRY w/ PHK15A4
0.10	985	985	1225	1245	1400	1440	1435	1430	1405	1410	1355
0.20	985	985	1200	1230	1365	1415	1400	1400	1385	1390	1325
0.30	975	980	1165	1210	1320	1390	1350	1360	1355	1360	1285
0.40	960	965	1120	1175	1270	1350	1300	1310	1315	1320	1240
0.50	935	945	1060	1135	1205	1305	1235	1260	1270	1275	1185
0.60	910	920	990	1080	1140	1245	1165	1210	1215	1225	1125
0.70									1150	1160	1055
0.80									1080	1095	980
0.90									1005	1015	895
1.00									920	930	805

TOTAL EXTERNAL STATIC "W.C."	SPCO/PCA/PCB42			SPCO/PCA/PCB48			SPCO/PCA/PCB60			PCA48B0004A			PCA60B0004A		
	LOW SPEED		HIGH SPEED	MED SPEED		HIGH SPEED	HIGH SPEED		HIGH SPEED	LOW SPEED		HIGH SPEED	HIGH SPEED		HIGH SPEED
	WET	DRY	DRY w/ PHK20	WET	DRY	DRY w/ PHK20	WET	DRY	DRY w/ PHK20	WET	DRY	DRY w/ PHK30	WET	DRY	DRY w/ PHK30
0.10	1460	1480	1455	1800	1805	2175	1965	1970	2155	1760	1785	2060	1810	1845	2040
0.20	1430	1460	1405	1760	1770	2095	1925	1930	2070	1740	1760	2025	1785	1830	1995
0.30	1395	1435	1350	1720	1730	200	1885	1890	1985	1715	1740	1980	1760	1805	1945
0.40	1350	1395	1290	1675	1690	1910	1845	1845	1900	1695	1715	1935	1730	1785	1890
0.50	1290	1350	1230	1625	1640	1805	1795	1800	1815	1670	1695	1875	1695	1755	1830
0.60	1225	1295	1165	1575	1585	1700	1740	1745	1735	1645	1670	1815	1660	1725	1765
0.70										1620	1645	1745	1625	1690	1690
0.80										1595	1620	1670	1580	1655	1610
0.90										1570	1595	1585	1540	1620	1530
1.00										1545	1570	1495	1490	1575	1440

TOTAL EXTERNAL STATIC "W.C."	SPHO/PHA24		SPHO/PHA30		SPHO/PHA36		SPHO/PHA 24, 30, 36
	LOW SPEED		MED SPEED		HIGH SPEED		HIGH SPEED
	WET	DRY	WET	DRY	WET	DRY	DRY w/ PHK20A1
0.10	940	930	1195	1200	1400	1440	1430
0.20	935	940	1180	1200	1365	1415	1400
0.30	930	935	1155	1190	1320	1390	1360
0.40	925	930	1120	1170	1270	1350	1310
0.50	905	915	1075	1140	1205	1305	1260
0.60	890	900	1025	1100	1140	1245	1210

TOTAL EXTERNAL STATIC "W.C."	SPHO/PHA42			SPHO/PHA48			SPHO/PHA60		
	HIGH SPEED		HIGH SPEED	MED SPEED		HIGH SPEED	HIGH SPEED		HIGH SPEED
	WET	DRY	DRY w/ PHK20	WET	DRY	DRY w/ PHK30	WET	DRY	DRY w/ PHK30
0.10	1460	1455	1620	1800	1810	2180	1965	1970	2160
0.20	1455	1460	1585	1765	1775	2095	1930	1935	2075
0.30	1435	1455	1540	1725	1735	2005	1885	1895	1990
0.40	1405	1440	1480	1680	1690	1910	1840	1850	1905
0.50	1365	1410	1415	1630	1640	1810	1790	1800	1820
0.60	1315	1370	1335	1580	1590	1700	1740	1750	1735

BLOWER PERFORMANCE DATA

Model	Nominal Cooling Capacity (MBh)	Nominal Cooling CFM	Nominal Heating Capacity (Input)	Nominal Heating CFM	Nominal Fan Only	Temp. Rise (°F)	Speed Taps	
		(Y+G)		(W1)	(G)		Cool	Heat
PGC24B0452A	24000	850	45000	930	570	35	A	A
PGC24B0702A	24000	850	70000	1140	570	45	A	B
PGC30B0702A	30000	1100	70000	1140	570	45	B	B
PGC36BO702A	36000	1300	70000	1140	570	45	C	B
PGC36B0902A	36000	1300	90000	1350	570	55	C	C
PGC42B0902A	42000	1450	90000	1650	815	40	A	A
PGC42B1152A	42000	1450	115000	1530	815	55	A	B
PGC48B0902A	48000	1700	90000	1650	815	40	B	A
PGC48B1152A	48000	1700	115000	1530	815	55	B	B

1) Installation is to be adjusted to obtain temperature rise within the range specified on the rating plate.
2) The temperature rise is for units installed at 0 - 2000 feet. At higher altitudes, a properly derated unit will have approximately the same temperature rise and CFM.
3) The chart is applicable for both vertical and horizontal airflow.
4) All speed tap settings are factory selected according to unit size.
5) Data shown without filters. Consult filter manufacturer for pressure drops to be added.
6) Motor is constant CFM for external pressures 0.1" W.C. to 0.8" W.C.
7) Maximum external static pressure limits: 0.8" W.C.

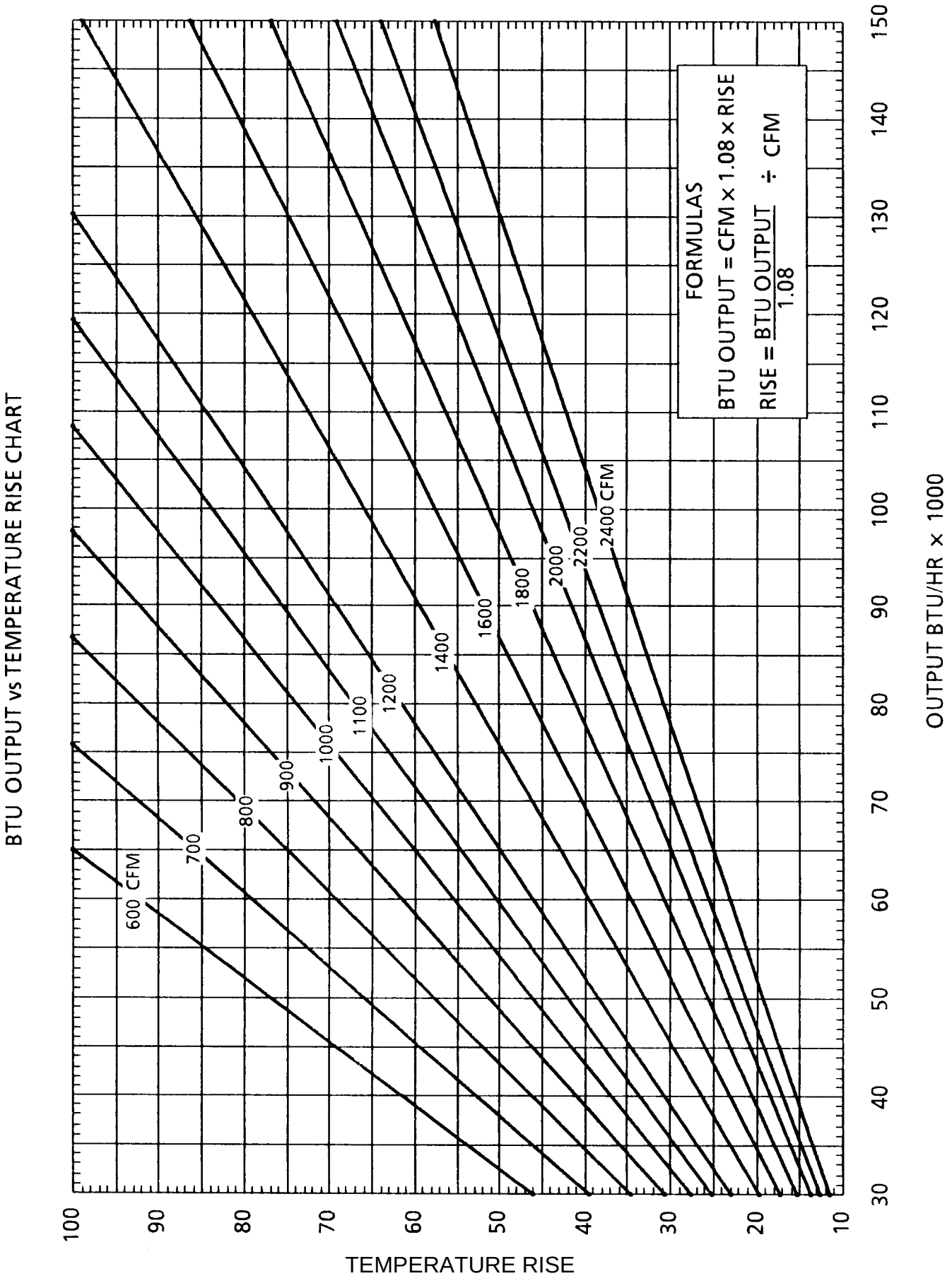
CFM & Temperature Rise vs. External Static Pressure

MODEL	MOTOR SPEED	External Static Pressure, Inches Water Column													
		0.1		0.2		0.3		0.4		0.5		0.6		0.7	
		CFM	Rise	CFM	Rise	CFM	Rise	CFM	Rise	CFM	Rise	CFM	Rise	CFM	
SPCG/PGA/PGB 24045	HI	1575	--	1500	--	1455	--	1390	--	1325	--	1250	27	1165	
30045	MED	1230	27	1215	27	1190	28	1155	29	1100	30	1060	31	990	
36045	LO	950	35	950	35	945	35	930	36	900	37	855	39	800	
SPCG/PGA/PGB 24070	HI *	1575	33	1500	35	1455	36	1390	37	1325	39	1250	41	1165	
30070	MED *	1230	42	1215	43	1190	44	1155	45	1100	47	1060	49	990	
36070	LO	950	55	950	55	945	55	930	56	900	58	855	--	800	
SPCG/PGA/PGB 24090	HI *	1575	42	1500	44	1455	46	1390	48	1325	50	1250	53	1165	
30090	MED *	1230	54	1215	55	1190	56	1155	58	1100	61	1060	63	990	
36090	LO	950	--	950	--	945	--	930	--	900	--	855	--	800	
SPCG/PGA/PGB 42090	HI	2230	30	2150	31	2060	32	1980	34	1890	35	1785	37	1680	
48090	LO	1560	43	1550	43	1530	44	1500	44	1450	46	1390	48	1300	
SPCG/PGA/PGB 42115	HI	2230	--	2150	--	2060	41	1980	43	1890	45	1785	48	1680	
48115	LO	1560	55	1550	55	1530	56	1500	57	1450	59	1390	61	1300	
	HI *	2160	46	2120	47	2080	48	2030	49	1990	50	1945	51	1900	
SPCG/PGA/PGB 48135	MED *	1750	57	1725	58	1700	59	1680	60	1580	61	1615	62	1575	
	LO	1490	67	1480	68	1470	68	1450	69	1440	69	1415	--	1360	
	HI	2160	31	2120	31	2080	32	2030	33	1990	34	1945	34	1900	
SPCG/PGA/PGB 60090	MED	1750	38	1725	39	1700	39	1680	40	1680	40	1615	41	1675	
	LO	1490	45	1480	45	1470	45	1450	46	1440	46	1415	48	1360	
	HI *	2160	--	2120	--	2080	41	2030	42	1990	43	1945	44	1900	
SPCG/PGA/PGB 60115	MED *	1750	49	1725	49	1700	50	1680	51	1650	52	1615	53	1575	
	LO	1490	57	1480	58	1470	58	1460	58	1440	59	1415	60	1360	
	HI *	2160	46	2120	47	2080	48	2030	49	1990	50	1945	51	1900	
SPCG/PGA/PGB 60135	MED *	1750	57	1725	58	1700	59	1680	60	1650	61	1615	62	1575	
	LO	1490	67	1480	68	1470	68	1460	68	1440	69	1415	--	1360	

NOTE:

1. ***** Indicates blower speeds available on 460 Volt 3 phase models.
2. All airflow is dry coil.
3. INSTALLATION IS TO BE ADJUSTED TO OBTAIN TEMPERATURE RISE WITHIN THE RISE RANGE SPECIFIED ON THE RATING PLATE.
4. The above chart is for information only. For satisfactory operation, external static pressure should not exceed value shown on rating plate. The shaded area indicates ranges in excess of maximum external static pressure allowable when heating.
5. The above chart is for units installed at 0-2000 feet. At higher altitudes, a properly derated unit will have approximately the same temperature rise at a particular CFM, while the ESP at that CFM will be lower.
6. Cooling operation may require a different blower speed than heating operation.

BLOWER PERFORMANCE DATA



COOLING PERFORMANCE DATA

SPCO / SPCG24 or PCA / PGA24
850 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
2670 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	26	27850	24350	3500	154	82	9.3	2100
	67	21	28150	19050	9100	155	83	9.4	2105
	72	15	28300	13700	14600	155	83	9.4	2110
	77	10	28450	8750	19700	155	83	9.4	2110
65	62	26	27300	24150	3150	167	83	9.6	2160
	67	20	27550	18800	8750	167	83	9.7	2165
	72	15	27750	13500	14250	167	84	9.7	2165
	77	9	27850	8600	19250	167	84	9.7	2170
70	62	26	26700	23900	2800	179	84	9.9	2220
	67	20	26950	18600	8350	180	84	10	2225
	72	14	27100	13300	13800	180	85	10	2230
	77	9	27250	8400	18850	180	85	10	2230
75	62	26	26100	23700	2400	192	84	10.2	2280
	67	20	26350	18400	7950	193	85	10.3	2285
	72	14	26500	13100	13400	193	86	10.3	2290
	77	9	26650	8250	18400	194	86	10.3	2295
80	62	25	25500	23450	2050	207	85	10.5	2345
	67	20	25700	18150	7550	208	86	10.6	2355
	72	14	25850	12900	12950	208	87	10.6	2355
	77	9	26000	8100	17900	208	87	10.6	2360
85	62	25	24900	23200	1700	221	86	10.8	2405
	67	19	25100	17950	7150	222	87	10.9	2415
	72	14	25200	12700	12500	223	88	10.9	2420
	77	9	25350	7900	17450	222	88	10.9	2420
90	62	25	24250	22950	1300	237	87	11.1	2475
	67	19	24450	17750	6700	237	88	11.2	2480
	72	14	24600	12500	12100	238	88	11.2	2485
	77	8	24750	7750	17000	237	89	11.2	2485
95	62	25	23550	22700	850	253	88	11.4	2540
	67	19	23800	17500	6300	253	89	11.5	2545
	72	13	23950	12300	11650	253	89	11.5	2550
	77	8	24050	7550	16500	254	90	11.5	2555
100	62	24	22950	22450	500	269	89	11.7	2605
	67	19	23150	17250	5900	269	90	11.7	2615
	72	13	23250	12100	11150	270	90	11.8	2615
	77	8	23400	7400	16000	270	91	11.8	2620
105	62	24	22300	22200	100	286	90	12	2670
	67	19	22450	17050	5400	286	91	12	2680
	72	13	22550	11900	10650	287	92	12	2690
	77	8	22700	7200	15500	287	92	12.1	2690
110	62	24	21550	21550	0	304	92	12.3	2745
	67	18	21750	16800	4950	304	92	12.3	2750
	72	13	21850	11700	10150	305	93	12.3	2760
	77	8	22000	7000	15000	305	93	12.3	2765
115	62	24	20850	20850	0	322	93	12.5	2815
	67	18	21050	16550	4500	323	93	12.6	2825
	72	12	21150	11500	9650	323	94	12.6	2830
	77	7	21250	6850	14400	323	94	12.6	2840

COOLING PERFORMANCE DATA

SPCO / SPCG30 or PCA / PGA30
1100 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
2700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	25	34900	30550	4350	148	77	11.5	2550
	67	20	35300	23850	11450	149	78	11.6	2560
	72	14	35600	17100	18500	149	79	11.6	2565
	77	9	35800	10850	24950	150	79	11.6	2570
65	62	25	34150	30300	3850	160	78	11.9	2645
	67	20	34600	23600	11000	160	79	11.9	2650
	72	14	34850	16850	18000	161	80	11.9	2655
	77	9	35100	10650	24450	162	80	12	2665
70	62	25	33450	30000	3450	172	79	12.3	2735
	67	19	33850	23300	10550	174	80	12.3	2745
	72	14	34100	16650	17450	174	80	12.3	2750
	77	9	34350	10450	23900	174	81	12.3	2755
75	62	25	32700	29700	3000	186	80	12.6	2825
	67	19	33100	23050	10050	187	81	12.7	2835
	72	14	33350	16400	16950	187	81	12.7	2840
	77	9	33600	10250	23350	187	82	12.7	2845
80	62	25	31950	29450	2500	200	81	13	2915
	67	19	32350	22800	9550	200	82	13	2920
	72	13	32600	16150	16450	201	82	13.1	2930
	77	8	32800	10050	22750	201	83	13.1	2935
85	62	24	31200	29150	2050	214	82	13.4	3000
	67	19	31550	22550	9000	215	82	13.4	3015
	72	13	31850	15950	15900	215	83	13.4	3015
	77	8	32050	9850	22200	215	84	13.4	3025
90	62	24	30450	28850	1600	229	82	13.7	3090
	67	19	30800	22300	8500	229	83	13.8	3100
	72	13	31000	15700	15300	230	84	13.8	3110
	77	8	31250	9650	21600	230	84	13.8	3110
95	62	24	29650	28600	1050	244	83	14.1	3180
	67	18	30000	22000	8000	245	84	14.1	3190
	72	13	30250	15450	14800	245	85	14.2	3195
	77	8	30450	9450	21000	246	85	14.2	3205
100	62	24	28850	28300	550	260	84	14.5	3265
	67	18	29200	21700	7500	261	85	14.5	3280
	72	13	29400	15200	14200	261	86	14.6	3285
	77	8	29650	9250	20400	261	86	14.6	3290
105	62	23	28050	28000	50	277	85	14.9	3350
	67	18	28400	21450	6950	277	86	14.9	3360
	72	12	28600	14950	13650	277	87	14.9	3370
	77	8	28750	9000	19750	278	87	15	3380
110	62	23	27250	27250	0	294	86	15.3	3440
	67	18	27550	21200	6350	294	87	15.3	3450
	72	12	27750	14700	13050	294	88	15.3	3460
	77	7	27900	8800	19100	296	88	15.4	3470
115	62	23	26400	26400	0	311	87	15.6	3525
	67	17	26650	20900	5750	313	88	15.7	3545
	72	12	26900	14450	12450	312	89	15.7	3550
	77	7	27050	8550	18500	313	89	15.8	3560

COOLING PERFORMANCE DATA

SPCO / SPCG36 or PCA / PGA36Bxxx(2 or 3A) or (3B or C)
1300 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3060 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	26	41300	36600	4700	165	79	13.7	9.2	3005	2765
	67	20	41850	28550	13300	165	80	13.8	9.2	3010	2780
	72	14	42150	20450	21700	166	81	13.8	9.2	3020	2775
	77	9	42400	13000	29400	167	81	13.8	9.2	3025	2785
65	62	25	40500	36250	4250	177	80	14.2	9.6	3115	2900
	67	20	40900	28200	12700	179	81	14.2	9.7	3130	2915
	72	14	41250	20200	21050	179	82	14.2	9.6	3125	2915
	77	9	41500	12750	28750	180	82	14.3	9.7	3140	2925
70	62	25	39550	35900	3650	192	81	14.7	10.1	3225	3040
	67	20	40050	27900	12150	192	82	14.7	10.1	3235	3050
	72	14	40350	19900	20450	193	83	14.7	10.1	3240	3055
	77	9	40600	12550	28050	193	83	14.8	10.1	3245	3060
75	62	25	38700	35600	3100	205	82	15.1	10.5	3330	3170
	67	19	39150	27600	11550	206	83	15.1	10.5	3340	3180
	72	14	39400	19600	19800	207	83	15.2	10.6	3350	3185
	77	9	39650	12300	27350	207	84	15.2	10.6	3355	3190
80	62	25	37800	35250	2550	221	83	15.6	10.9	3435	3300
	67	19	38200	27250	10950	222	84	15.6	11.0	3450	3310
	72	14	38500	19350	19150	222	84	15.6	11.0	3455	3310
	77	8	38750	12050	26700	222	85	15.7	11.0	3460	3315
85	62	24	36850	34850	2000	236	84	16.0	11.3	3545	3425
	67	19	37300	26950	10350	237	84	16.1	11.4	3555	3435
	72	13	37600	19050	18550	237	85	16.1	11.4	3560	3440
	77	8	37800	11800	26000	237	85	16.1	11.4	3565	3445
90	62	24	35950	34550	1400	252	84	16.5	11.7	3645	3545
	67	19	36300	26600	9700	253	85	16.5	11.8	3665	3560
	72	13	36600	18750	17850	253	86	16.6	11.8	3670	3565
	77	8	36800	11500	25300	254	86	16.6	11.8	3680	3575
95	62	24	35000	34150	850	268	85	16.9	12.1	3750	3670
	67	18	35400	26300	9100	269	86	17.0	12.1	3765	3680
	72	13	35600	18450	17150	270	87	17.0	12.1	3775	3685
	77	8	35850	11250	24600	270	87	17.1	12.2	3785	3695
100	62	24	34050	33800	250	286	86	17.4	12.4	3855	3780
	67	18	34400	25950	8450	286	87	17.5	12.4	3870	3795
	72	13	34650	18150	16500	287	88	17.5	12.5	3880	3805
	77	8	34800	11000	23800	288	88	17.5	12.5	3895	3815
105	62	23	33000	33000	0	304	87	17.9	12.7	3970	3900
	67	18	33400	25600	7800	304	88	17.9	12.8	3980	3910
	72	13	33600	17850	15750	305	89	18.0	12.8	3990	3920
	77	8	33800	10750	23050	306	89	18.0	12.8	4005	3930
110	62	23	32000	32000	0	322	88	18.4	13.0	4075	4010
	67	18	32350	25250	7100	323	89	18.4	13.1	4090	4025
	72	12	32600	17550	15050	323	90	18.5	13.1	4100	4035
	77	7	32750	10450	22300	324	90	18.5	13.1	4110	4045
115	62	23	31000	31000	0	341	89	18.9	13.3	4180	4120
	67	17	31300	24900	6400	342	90	18.9	13.3	4200	4140
	72	12	31550	17250	14300	342	91	19.0	13.4	4205	4145
	77	7	31650	10200	21450	343	91	19.0	13.4	4220	4155

COOLING PERFORMANCE DATA

PCA /PGA36Bxxx2(B or C)
1300 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3060 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	26	42900	37200	5700	163	77	13.7	3015
	67	21	43400	29100	14300	164	77	13.7	3025
	72	15	43650	20950	22700	165	78	13.8	3040
	77	9	44000	13450	30550	165	78	13.8	3040
65	62	26	41800	36750	5050	176	77	14.2	3135
	67	20	42350	28700	13650	176	78	14.2	3145
	72	15	42600	20600	22000	177	79	14.3	3160
	77	9	42900	13150	29750	177	79	14.3	3165
70	62	26	40750	36350	4400	189	78	14.7	3255
	67	20	41250	28350	12900	190	79	14.8	3265
	72	14	41550	20300	21250	190	80	14.8	3275
	77	9	41800	12850	28950	191	80	14.9	3285
75	62	25	39750	35950	3800	203	79	15.2	3370
	67	20	40200	27950	12250	204	80	15.3	3385
	72	14	40450	19950	20500	205	81	15.3	3395
	77	9	40750	12550	28200	205	81	15.4	3400
80	62	25	38700	35550	3150	218	80	15.7	3485
	67	19	39200	27600	11600	218	81	15.8	3495
	72	14	39450	19600	19850	219	82	15.8	3505
	77	9	39700	12300	27400	219	82	15.9	3515
85	62	25	37650	35200	2450	233	81	16.2	3590
	67	19	38100	27200	10900	234	82	16.3	3610
	72	14	38400	19300	19100	234	83	16.3	3620
	77	8	38600	12000	26600	235	83	16.4	3625
90	62	25	36600	34750	1850	249	82	16.7	3705
	67	19	37050	26850	10200	249	83	16.8	3720
	72	13	37300	18950	18350	250	83	16.8	3730
	77	8	37550	11700	25850	250	84	16.9	3740
95	62	24	35550	34400	1150	265	83	17.2	3810
	67	19	36000	26500	9500	265	84	17.2	3825
	72	13	36250	18650	17600	266	84	17.3	3835
	77	8	36450	11400	25050	267	85	17.3	3845
100	62	24	34500	33950	550	282	84	17.6	3920
	67	18	34900	26150	8750	282	85	17.7	3930
	72	13	35150	18300	16850	282	85	17.8	3945
	77	8	35350	11150	24200	283	86	17.8	3955
105	62	24	33450	33450	0	298	85	18.1	4025
	67	18	33750	25750	8000	300	86	18.2	4045
	72	13	34000	17950	16050	300	86	18.2	4055
	77	8	34200	10850	23350	300	87	18.3	4065
110	62	23	32300	32300	0	316	86	18.5	4130
	67	18	32600	25350	7250	318	87	18.6	4155
	72	12	32900	17650	15250	317	88	18.6	4160
	77	7	33000	10550	22450	319	88	18.7	4175
115	62	23	31100	31100	0	336	87	19	4245
	67	18	31450	24950	6500	336	88	19	4265
	72	12	31600	17250	14350	337	89	19.1	4280
	77	7	31800	10200	21600	337	89	19.1	4290

COOLING PERFORMANCE DATA

PCA36B0004A
1300 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3000 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	26	42100	36800	5300	164	79	4.9	2860
	67	20	42600	28750	13850	165	80	4.9	2870
	72	15	43000	20700	22300	165	80	4.9	2865
	77	9	43250	13200	30050	166	81	4.9	2875
65	62	26	41200	36450	4750	177	80	5.1	3000
	67	20	41650	28400	13250	178	81	5.1	3010
	72	14	42050	20400	21650	178	81	5.1	3005
	77	9	42300	12950	29350	179	82	5.1	3015
70	62	25	40250	36100	4150	191	81	5.3	3135
	67	20	40750	28100	12650	192	82	5.3	3140
	72	14	41000	20050	20950	192	82	5.3	3150
	77	9	41300	12700	28600	193	83	5.3	3150
75	62	25	39250	35700	3550	206	82	5.5	3265
	67	19	39700	27750	11950	206	82	5.5	3275
	72	14	40050	19750	20300	206	83	5.5	3275
	77	9	40350	12450	27900	207	83	5.5	3280
80	62	25	38250	35300	2950	221	82	5.7	3395
	67	19	38750	27400	11350	221	83	5.7	3400
	72	14	39000	19450	19550	222	84	5.7	3410
	77	9	39250	12150	27100	222	84	5.7	3415
85	62	24	37250	34950	2300	236	83	5.9	3520
	67	19	37750	27050	10700	236	84	5.9	3525
	72	13	38050	19150	18900	236	85	5.9	3530
	77	8	38250	11900	26350	237	85	5.9	3535
90	62	24	36250	34550	1700	252	84	6.1	3640
	67	19	36700	26700	10000	252	85	6.1	3650
	72	13	36950	18800	18150	252	86	6.1	3655
	77	8	37200	11600	25600	253	86	6.1	3660
95	62	24	35250	34150	1100	268	85	6.3	3755
	67	18	35600	26300	9300	268	86	6.3	3765
	72	13	35900	18500	17400	269	87	6.3	3775
	77	8	36100	11300	24800	269	87	6.3	3780
100	62	24	34150	33750	400	286	86	6.4	3875
	67	18	34500	25950	8550	286	87	6.5	3890
	72	13	34750	18150	16600	287	88	6.5	3900
	77	8	35000	11000	24000	286	88	6.5	3900
105	62	23	33100	33100	0	303	87	6.6	3985
	67	18	33450	25550	7900	304	88	6.6	4000
	72	12	33650	17800	15850	304	89	6.6	4010
	77	8	33900	10750	23150	304	89	6.6	4015
110	62	23	32000	32000	0	321	88	6.7	4100
	67	18	32350	25200	7150	321	89	6.7	4115
	72	12	32550	17500	15050	322	90	6.7	4125
	77	7	32750	10450	22300	322	90	6.7	4130
115	62	23	30900	30900	0	339	90	6.8	4210
	67	17	31200	24800	6400	341	90	6.8	4230
	72	12	31450	17150	14300	341	91	6.8	4235
	77	7	31550	10150	21400	342	91	6.8	4245

COOLING PERFORMANCE DATA

SPCO / SPCG42 or PCA / PGA42
1400 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3500 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	27	48950	41000	7950	157	76	16.0	11.8	3475	3510
	67	21	49550	32200	17350	157	77	16.0	11.8	3480	3510
	72	15	49900	23400	26500	157	77	16.1	11.8	3490	3520
	77	10	50250	15250	35000	158	78	16.1	11.9	3500	3525
65	62	26	47800	40550	7250	169	77	16.5	12.1	3605	3635
	67	21	48350	31800	16550	169	78	16.6	12.1	3615	3640
	72	15	48700	23000	25700	170	78	16.7	12.1	3625	3650
	77	10	49000	14900	34100	170	79	16.7	12.1	3635	3650
70	62	26	46650	40100	6550	181	78	17.1	12.4	3735	3760
	67	20	47150	31350	15800	182	79	17.2	12.4	3745	3770
	72	15	47550	22650	24900	182	79	17.2	12.4	3755	3775
	77	9	47800	14550	33250	183	80	17.2	12.4	3765	3785
75	62	26	45450	39600	5850	195	79	17.7	12.6	3860	3885
	67	20	45950	30950	15000	196	80	17.7	12.7	3875	3900
	72	15	46300	22250	24050	196	80	17.8	12.7	3885	3905
	77	9	46600	14250	32350	196	81	17.8	12.7	3890	3920
80	62	26	44250	39150	5100	209	80	18.2	12.9	3985	4015
	67	20	44750	30500	14250	209	81	18.3	13.0	4000	4030
	72	14	45100	21850	23250	209	81	18.3	13.0	4005	4040
	77	9	45350	13900	31450	210	82	18.4	13.0	4020	4050
85	62	25	43000	38700	4300	223	81	18.7	13.2	4105	4145
	67	20	43500	30050	13450	224	82	18.8	13.3	4120	4160
	72	14	43800	21450	22350	224	83	18.9	13.3	4130	4170
	77	9	44100	13550	30550	224	83	18.9	13.3	4140	4175
90	62	25	41800	38200	3600	238	82	19.3	13.6	4225	4270
	67	19	42250	29650	12600	239	83	19.3	13.6	4245	4290
	72	14	42500	21050	21450	239	84	19.4	13.6	4255	4300
	77	9	42800	13200	29600	240	84	19.4	13.6	4265	4310
95	62	25	40550	37750	2800	254	83	19.8	13.9	4345	4395
	67	19	41000	29200	11800	255	84	19.8	13.9	4365	4415
	72	13	41300	20700	20600	255	85	19.9	13.9	4370	4420
	77	8	41550	12850	28700	255	85	19.9	14.0	4380	4435
100	62	24	39300	37250	2050	270	85	20.3	14.2	4465	4520
	67	19	39700	28750	10950	270	85	20.3	14.2	4480	4535
	72	13	39950	20300	19650	271	86	20.4	14.3	4495	4550
	77	8	40200	12500	27700	272	86	20.4	14.3	4505	4565
105	62	24	38000	36750	1250	286	86	20.7	14.5	4580	4645
	67	18	38400	28300	10100	287	87	20.8	14.5	4600	4660
	72	13	38700	19900	18800	287	87	20.9	14.6	4615	4675
	77	8	38900	12150	26750	288	87	20.9	14.6	4625	4685
110	62	24	36700	36250	450	303	87	21.2	14.8	4705	4765
	67	18	37100	27850	9250	304	88	21.3	14.8	4725	4790
	72	13	37350	19500	17850	305	88	21.4	14.8	4740	4800
	77	8	37550	11800	25750	305	89	21.4	14.8	4750	4815
115	62	23	35400	35400	0	321	88	21.7	15.1	4830	4895
	67	18	35750	27400	8350	322	89	21.8	15.1	4855	4915
	72	12	35950	19100	16850	323	90	21.8	15.1	4870	4930
	77	7	36200	11450	24750	323	90	21.9	15.1	4885	4945

COOLING PERFORMANCE DATA

SPCO / SPCG48 or PCA / PGA48Bxxx(2 or 3A)
1700 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	26	57000	48900	8100	161	80	19.4	14.8	4130	4155
	67	21	57500	38200	19300	162	81	19.5	14.8	4145	4165
	72	15	57850	27600	30250	162	82	19.6	14.9	4150	4175
	77	10	58150	17750	40400	163	82	19.6	14.9	4160	4185
65	62	26	55650	48350	7300	174	81	20.0	15.1	4285	4310
	67	20	56150	37750	18400	175	82	20.0	15.2	4300	4325
	72	15	56550	27150	29400	175	83	20.1	15.2	4305	4335
	77	9	56850	17400	39450	175	83	20.1	15.2	4315	4340
70	62	26	54350	47850	6500	187	82	20.5	15.5	4435	4465
	67	20	54850	37300	17550	188	83	20.6	15.5	4450	4480
	72	14	55200	26750	28450	188	83	20.6	15.5	4460	4490
	77	9	55550	17000	38550	188	84	20.6	15.5	4465	4495
75	62	26	53050	47350	5700	201	83	21.0	15.8	4580	4620
	67	20	53500	36800	16700	202	84	21.1	15.8	4600	4630
	72	14	53850	26300	27550	202	84	21.1	15.9	4605	4645
	77	9	54150	16650	37500	202	85	21.2	15.9	4615	4650
80	62	25	51700	46850	4850	215	84	21.6	16.1	4725	4770
	67	20	52150	36350	15800	216	85	21.7	16.2	4745	4790
	72	14	52500	25900	26600	216	85	21.7	16.2	4755	4800
	77	9	52750	16250	36500	217	86	21.8	16.2	4765	4810
85	62	25	50300	46300	4000	231	85	22.2	16.5	4875	4920
	67	19	50800	35850	14950	231	86	22.3	16.5	4890	4940
	72	14	51100	25450	25650	231	86	22.4	16.6	4900	4950
	77	9	51400	15900	35500	231	87	22.4	16.6	4905	4955
90	62	25	48950	45800	3150	246	86	22.9	16.8	5015	5070
	67	19	49400	35400	14000	246	87	23.0	16.9	5030	5090
	72	13	49700	25050	24650	247	87	23.0	16.9	5045	5100
	77	8	50000	15500	34500	247	88	23.1	16.9	5055	5110
95	62	24	47500	45250	2250	262	87	23.6	17.2	5165	5220
	67	19	48000	34900	13100	263	88	23.7	17.2	5180	5235
	72	13	48250	24600	23650	263	88	23.7	17.2	5190	5245
	77	8	48500	15150	33350	263	89	23.8	17.2	5205	5260
100	62	24	46100	44700	1400	279	88	24.3	17.5	5310	5365
	67	19	46500	34400	12100	279	89	24.4	17.5	5325	5385
	72	13	46800	24150	22650	279	89	24.4	17.5	5340	5395
	77	8	47050	14750	32300	280	90	24.5	17.5	5355	5405
105	62	24	44650	44150	500	295	89	25.0	17.8	5460	5510
	67	18	45000	33850	11150	297	90	25.1	17.8	5485	5530
	72	13	45250	23700	21550	297	90	25.2	17.8	5500	5545
	77	8	45550	14350	31200	297	91	25.2	17.8	5515	5555
110	62	23	43150	43150	0	313	90	25.8	18.0	5620	5660
	67	18	43500	33350	10150	314	91	25.8	18.0	5650	5680
	72	13	43800	23250	20550	314	91	25.8	18.0	5665	5695
	77	8	44000	13950	30050	315	92	25.9	18.0	5685	5705
115	62	23	41650	41650	0	332	92	26.4	18.2	5800	5810
	67	18	42000	32850	9150	333	92	26.5	18.2	5830	5830
	72	12	42250	22800	19450	333	93	26.5	18.2	5855	5845
	77	7	42500	13550	28950	333	93	26.5	18.2	5870	5865

COOLING PERFORMANCE DATA

PCA48B0002B
1700 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	27	57100	50750	6350	157	79	18.6	3855
	67	21	57600	39700	17900	158	79	18.7	3865
	72	15	57950	28600	29350	158	80	18.7	3870
	77	10	58300	18450	39850	158	80	18.7	3870
65	62	26	55750	50200	5550	170	79	19.2	4015
	67	21	56250	39200	17050	170	80	19.2	4015
	72	15	56600	28200	28400	170	81	19.2	4025
	77	10	56900	18050	38850	170	81	19.3	4025
70	62	26	54400	49650	4750	182	80	19.7	4160
	67	20	54900	38700	16200	183	81	19.8	4170
	72	15	55200	27750	27450	183	82	19.8	4175
	77	9	55550	17650	37900	184	82	19.8	4180
75	62	26	53050	49150	3900	196	81	20.3	4310
	67	20	53550	38200	15350	197	82	20.3	4320
	72	14	53900	27300	26600	196	82	20.3	4325
	77	9	54150	17250	36900	197	83	20.4	4335
80	62	26	51700	48600	3100	210	82	20.8	4460
	67	20	52150	37700	14450	211	83	20.9	4470
	72	14	52500	26850	25650	211	83	20.9	4475
	77	9	52750	16850	35900	212	84	20.9	4485
85	62	25	50350	48050	2300	225	83	21.4	4605
	67	20	50800	37200	13600	225	84	21.5	4620
	72	14	51100	26400	24700	225	84	21.5	4625
	77	9	51350	16500	34850	226	85	21.5	4635
90	62	25	49000	47500	1500	240	84	22	4750
	67	19	49400	36700	12700	240	85	22.1	4765
	72	14	49700	25950	23750	241	85	22.1	4775
	77	8	49950	16100	33850	241	86	22.1	4780
95	62	25	47550	46950	600	256	85	22.6	4900
	67	19	48000	36200	11800	257	86	22.7	4915
	72	13	48250	25500	22750	257	86	22.7	4920
	77	8	48500	15700	32800	257	87	22.8	4930
100	62	24	46150	46150	0	272	86	23.3	5045
	67	19	46550	35700	10850	273	87	23.4	5055
	72	13	46800	25050	21750	273	87	23.4	5065
	77	8	47050	15300	31750	273	88	23.4	5075
105	62	24	44750	44750	0	289	87	23.9	5180
	67	19	45100	35150	9950	290	88	24	5195
	72	13	45350	24600	20750	290	88	24.1	5200
	77	8	45550	14900	30650	290	89	24.1	5210
110	62	24	43250	43250	0	306	88	24.6	5315
	67	18	43650	34650	9000	307	89	24.7	5325
	72	13	43900	24150	19750	307	89	24.8	5330
	77	8	44100	14500	29600	308	90	24.8	5340
115	62	24	41800	41800	0	325	89	25.4	5440
	67	18	42200	34150	8050	325	90	25.4	5445
	72	12	42400	23650	18750	325	90	25.5	5455
	77	7	42600	14100	28500	325	91	25.5	5460

COOLING PERFORMANCE DATA

PCA48B0003B
1700 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	27	56500	48800	7700	157	79	14.4	3605
	67	21	57000	38150	18850	157	79	14.4	3610
	72	15	57400	27500	29900	158	80	14.4	3610
	77	10	57800	17650	40150	158	80	14.4	3600
65	62	26	55150	48300	6850	169	79	14.8	3815
	67	20	55700	37650	18050	170	80	14.8	3815
	72	15	56050	27050	29000	170	81	14.8	3815
	77	9	56400	17300	39100	170	81	14.8	3810
70	62	26	53850	47800	6050	182	80	15.1	4005
	67	20	54400	37200	17200	182	81	15.1	4005
	72	14	54700	26650	28050	183	81	15.1	4010
	77	9	55050	16900	38150	183	82	15.1	4005
75	62	26	52550	47250	5300	196	81	15.4	4190
	67	20	53050	36750	16300	196	82	15.5	4190
	72	14	53350	26200	27150	196	82	15.5	4195
	77	9	53650	16550	37100	196	83	15.5	4190
80	62	25	51150	46750	4400	210	82	15.8	4365
	67	20	51650	36250	15400	210	83	15.8	4370
	72	14	51950	25800	26150	210	83	15.8	4370
	77	9	52250	16150	36100	211	84	15.8	4370
85	62	25	49850	46200	3650	224	83	16.1	4525
	67	19	50250	35750	14500	225	84	16.1	4535
	72	14	50600	25350	25250	225	84	16.1	4535
	77	9	50850	15800	35050	225	85	16.1	4540
90	62	25	48500	45700	2800	239	84	16.4	4675
	67	19	48900	35300	13600	240	85	16.4	4690
	72	14	49150	24900	24250	241	85	16.4	4695
	77	8	49450	15400	34050	241	86	16.4	4700
95	62	25	47100	45200	1900	255	85	16.6	4820
	67	19	47500	34800	12700	256	86	16.7	4830
	72	13	47750	24500	23250	257	86	16.7	4840
	77	8	48000	15050	32950	257	87	16.7	4850
100	62	24	45750	44650	1100	272	86	16.9	4955
	67	19	46150	34350	11800	272	87	17	4965
	72	13	46400	24100	22300	272	87	17	4970
	77	8	46650	14650	32000	273	88	17	4975
105	62	24	44350	44150	200	289	87	17.2	5075
	67	18	44700	33850	10850	290	88	17.2	5090
	72	13	44950	23650	21300	290	88	17.3	5095
	77	8	45200	14300	30900	290	89	17.3	5100
110	62	24	43000	43000	0	306	88	17.4	5180
	67	18	43350	33400	9950	307	89	17.5	5190
	72	13	43600	23250	20350	307	89	17.5	5200
	77	8	43800	13950	29850	308	90	17.5	5210
115	62	23	41600	41600	0	324	89	17.7	5270
	67	18	42000	32900	9100	324	90	17.7	5280
	72	12	42200	22800	19400	325	90	17.7	5290
	77	7	42400	13550	28850	325	90	17.8	5300

COOLING PERFORMANCE DATA

PCA48B0004A
1700 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	26	55350	48350	7000	157	79	7.4	3910
	67	20	55850	37700	18150	157	80	7.4	3930
	72	15	56200	27100	29100	157	81	7.4	3935
	77	9	56500	17300	39200	157	81	7.4	3945
65	62	26	54250	47950	6300	169	80	7.6	4050
	67	20	54750	37350	17400	169	81	7.6	4065
	72	15	55100	26750	28350	170	81	7.6	4070
	77	9	55400	17000	38400	170	82	7.6	4080
70	62	26	53150	47500	5650	182	81	7.7	4185
	67	20	53650	36950	16700	183	82	7.7	4200
	72	14	54000	26400	27600	183	82	7.7	4205
	77	9	54250	16700	37550	183	82	7.7	4215
75	62	26	52050	47100	4950	195	82	7.9	4315
	67	20	52500	36550	15950	196	82	7.9	4330
	72	14	52800	26050	26750	197	83	7.9	4340
	77	9	53150	16400	36750	197	83	7.9	4345
80	62	25	50850	46600	4250	210	82	8	4455
	67	20	51350	36150	15200	210	83	8	4465
	72	14	51600	25650	25950	211	84	8	4480
	77	9	51900	16050	35850	211	84	8	4485
85	62	25	49650	46150	3500	224	83	8.2	4590
	67	19	50100	35700	14400	225	84	8.2	4605
	72	14	50400	25300	25100	225	84	8.2	4610
	77	9	50700	15750	34950	226	85	8.2	4620
90	62	25	48400	45650	2750	240	84	8.3	4725
	67	19	48850	35250	13600	240	85	8.3	4740
	72	14	49100	24900	24200	241	85	8.3	4750
	77	8	49400	15400	34000	241	86	8.3	4755
95	62	25	47050	45150	1900	256	85	8.5	4870
	67	19	47500	34800	12700	256	86	8.5	4880
	72	13	47750	24500	23250	257	86	8.5	4895
	77	8	48050	15050	33000	257	87	8.5	4895
100	62	24	45650	44600	1050	272	86	8.6	5015
	67	19	46100	34300	11800	272	87	8.6	5025
	72	13	46350	24050	22300	273	87	8.7	5040
	77	8	46650	14650	32000	273	88	8.7	5045
105	62	24	44200	44050	150	289	87	8.8	5165
	67	18	44600	33800	10800	289	88	8.8	5185
	72	13	44850	23600	21250	290	88	8.8	5195
	77	8	45050	14250	30800	290	89	8.9	5210
110	62	24	42550	42550	0	307	88	9	5335
	67	18	42950	33250	9700	307	89	9	5355
	72	13	43200	23100	20100	307	89	9	5370
	77	8	43500	13850	29650	307	90	9.1	5375
115	62	23	40850	40850	0	324	90	9.2	5515
	67	18	41250	32650	8600	324	90	9.2	5535
	72	12	41450	22600	18850	325	91	9.3	5555
	77	7	41600	13350	28250	326	91	9.3	5575

COOLING PERFORMANCE DATA

SPCO / SPCG60 or PCA / PGA60
1750 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
4700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	29	69950	56450	13500	160	77	24.8	18.8	5380	5170
	67	23	70850	44900	25950	161	78	24.9	18.8	5400	5185
	72	17	71450	33200	38250	161	78	25.0	18.9	5415	5190
	77	12	71900	22300	49600	162	79	25.1	18.9	5430	5200
65	62	29	68650	55900	12750	173	78	26.0	19.3	5610	5410
	67	23	69500	44350	25150	174	79	26.1	19.3	5630	5425
	72	17	70000	32700	37300	174	79	26.2	19.4	5645	5440
	77	11	70550	21900	48650	174	80	26.2	19.4	5655	5440
70	62	29	67200	55300	11900	187	79	27.1	19.8	5840	5640
	67	23	68050	43800	24250	187	80	27.2	19.8	5855	5650
	72	17	68600	32250	36350	187	80	27.2	19.8	5865	5660
	77	11	69100	21450	47650	188	81	27.3	19.9	5875	5680
75	62	29	65850	54750	11100	200	80	28.1	20.2	6040	5855
	67	23	66600	43250	23350	201	80	28.2	20.3	6070	5875
	72	17	67150	31750	35400	201	81	28.2	20.3	6075	5885
	77	11	67600	21050	46550	202	82	28.3	20.4	6085	5895
80	62	28	64350	54150	10200	215	80	29.1	20.7	6250	6065
	67	22	65150	42750	22400	215	81	29.2	20.8	6270	6085
	72	16	65600	31200	34400	217	82	29.3	20.8	6290	6095
	77	11	66100	20600	45500	217	82	29.3	20.9	6300	6115
85	62	28	62850	53550	9300	230	81	30.0	21.2	6450	6270
	67	22	63600	42150	21450	231	82	30.1	21.3	6475	6290
	72	16	64150	30750	33400	231	83	30.2	21.3	6485	6300
	77	10	64550	20150	44400	232	83	30.3	21.3	6505	6310
90	62	28	61350	52900	8450	246	82	30.9	21.7	6645	6465
	67	22	62050	41600	20450	247	83	31.0	21.8	6675	6490
	72	16	62550	30200	32350	247	84	31.1	21.8	6690	6500
	77	10	63000	19700	43300	247	84	31.2	21.9	6700	6515
95	62	27	59850	52300	7550	262	83	31.8	22.3	6835	6655
	67	21	60500	41000	19500	263	84	31.9	22.3	6870	6680
	72	15	61000	29700	31300	263	85	32.0	22.4	6885	6695
	77	10	61350	19200	42150	264	85	32.1	22.4	6905	6710
100	62	27	58200	51650	6550	279	84	32.7	22.8	7035	6835
	67	21	58900	40400	18500	280	85	32.8	22.9	7065	6870
	72	15	59300	29150	30150	280	86	32.9	22.9	7085	6890
	77	10	59700	18750	40950	281	86	33.0	23.0	7100	6900
105	62	27	56550	50950	5600	297	86	33.5	23.4	7225	7025
	67	21	57200	39800	17400	297	86	33.7	23.4	7260	7055
	72	15	57650	28600	29050	297	87	33.8	23.5	7275	7070
	77	10	58050	18300	39750	298	87	33.8	23.5	7290	7090
110	62	26	54850	50300	4550	314	87	34.4	23.9	7410	7200
	67	20	55450	39150	16300	315	88	34.5	24.0	7445	7235
	72	15	55900	28050	27850	315	88	34.6	24.1	7460	7250
	77	9	56250	17800	38450	316	89	34.7	24.1	7475	7270
115	62	26	53050	49600	3450	333	88	35.2	24.5	7595	7380
	67	20	53700	38550	15150	333	89	35.3	24.6	7615	7415
	72	14	54000	27450	26550	334	89	35.4	24.7	7640	7440
	77	9	54350	17250	37100	335	90	35.5	24.7	7655	7460

COOLING PERFORMANCE DATA

PCA60B0004A
1750 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
4670 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	29	69000	56550	12450	161	77	9.5	5225
	67	23	69800	44900	24900	161	78	9.5	5240
	72	17	70400	33150	37250	161	78	9.5	5245
	77	12	70850	22200	48650	162	79	9.5	5255
65	62	29	67600	56000	11600	173	78	9.7	5470
	67	23	68450	44350	24100	174	79	9.7	5475
	72	17	68900	32650	36250	175	79	9.7	5495
	77	11	69400	21750	47650	174	80	9.7	5495
70	62	29	66200	55400	10800	187	79	9.9	5695
	67	23	67000	43800	23200	187	79	10	5710
	72	17	67500	32150	35350	188	80	10	5720
	77	11	67950	21300	46650	188	81	10	5730
75	62	29	64800	54800	10000	201	79	10.2	5915
	67	23	65550	43250	22300	201	80	10.2	5930
	72	16	66000	31650	34350	202	81	10.2	5945
	77	11	66450	20900	45550	202	82	10.2	5950
80	62	28	63350	54200	9150	215	80	10.4	6120
	67	22	64050	42700	21350	216	81	10.5	6145
	72	16	64550	31150	33400	216	82	10.5	6155
	77	11	64950	20450	44500	217	82	10.5	6165
85	62	28	61900	53600	8300	230	81	10.7	6320
	67	22	62550	42150	20400	231	82	10.7	6350
	72	16	63050	30650	32400	231	83	10.7	6355
	77	10	63450	20000	43450	232	83	10.7	6370
90	62	28	60300	52950	7350	246	82	10.9	6525
	67	22	61000	41550	19450	247	83	11	6545
	72	16	61500	30150	31350	247	84	11	6560
	77	10	61850	19550	42300	248	84	11	6575
95	62	27	58800	52350	6450	262	83	11.2	6710
	67	21	59500	41000	18500	263	84	11.2	6740
	72	15	59900	29600	30300	264	85	11.2	6755
	77	10	60350	19100	41250	264	85	11.3	6760
100	62	27	57300	51750	5550	279	84	11.5	6890
	67	21	57900	40400	17500	280	85	11.5	6925
	72	15	58350	29100	29250	280	86	11.5	6940
	77	10	58700	18650	40050	281	86	11.5	6955
105	62	27	55700	51100	4600	297	86	11.7	7075
	67	21	56350	39850	16500	297	86	11.8	7105
	72	15	56800	28600	28200	298	87	11.8	7125
	77	9	57100	18200	38900	298	87	11.8	7145
110	62	26	54150	50450	3700	315	87	12	7255
	67	20	54750	39250	15500	315	87	12.1	7290
	72	15	55150	28050	27100	316	88	12.1	7310
	77	9	55500	17750	37750	316	89	12.1	7330
115	62	26	52550	49800	2750	334	88	12.3	7435
	67	20	53200	38700	14500	334	89	12.4	7465
	72	14	53550	27550	26000	334	89	12.4	7490
	77	9	53850	17250	36600	335	90	12.4	7515

COOLING PERFORMANCE DATA

PCB / PGB24
850 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
2670 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	25	25750	22750	3000	149	83	8	1635
	67	19	25950	17650	8300	150	84	8	1640
	72	14	26100	12550	13550	150	84	8	1640
	77	8	26200	7850	18350	150	84	8	1640
65	62	24	25400	22600	2800	162	83	8.3	1710
	67	19	25600	17500	8100	162	84	8.3	1710
	72	13	25700	12450	13250	163	85	8.3	1715
	77	8	25850	7750	18100	163	85	8.3	1715
70	62	24	25000	22450	2550	175	84	8.6	1790
	67	19	25200	17400	7800	176	85	8.6	1790
	72	13	25350	12300	13050	176	85	8.6	1790
	77	8	25500	7650	17850	176	86	8.6	1790
75	62	24	24650	22300	2350	189	84	9	1870
	67	19	24850	17250	7600	189	85	9	1870
	72	13	25000	12200	12800	190	86	9	1875
	77	8	25100	7550	17550	190	86	9	1875
80	62	24	24250	22200	2050	203	85	9.3	1955
	67	18	24450	17100	7350	204	86	9.3	1960
	72	13	24600	12100	12500	204	86	9.4	1960
	77	8	24700	7450	17250	204	87	9.4	1960
85	62	24	23850	22050	1800	219	86	9.7	2050
	67	18	24050	17000	7050	219	86	9.7	2050
	72	13	24200	11950	12250	219	87	9.8	2050
	77	8	24300	7350	16950	219	87	9.8	2055
90	62	24	23450	21850	1600	234	86	10.2	2145
	67	18	23650	16850	6800	235	87	10.2	2150
	72	13	23800	11850	11950	234	87	10.2	2145
	77	8	23900	7250	16650	235	88	10.2	2150
95	62	23	23000	21700	1300	250	87	10.6	2245
	67	18	23200	16700	6500	251	88	10.6	2250
	72	13	23300	11700	11600	251	88	10.6	2255
	77	8	23450	7150	16300	251	89	10.6	2250
100	62	23	22550	21550	1000	268	88	11.1	2355
	67	18	22750	16550	6200	268	88	11.1	2355
	72	12	22850	11600	11250	268	89	11.1	2360
	77	8	23000	7050	15950	268	89	11.1	2355
105	62	23	22100	21400	700	285	88	11.6	2465
	67	18	22250	16400	5850	286	89	11.6	2470
	72	12	22400	11450	10950	286	90	11.6	2470
	77	7	22500	6900	15600	287	90	11.6	2475
110	62	23	21550	21200	350	304	89	12.1	2585
	67	17	21750	16200	5550	304	90	12.1	2585
	72	12	21850	11300	10550	304	90	12.1	2585
	77	7	21950	6800	15150	305	91	12.2	2590
115	62	23	21000	21000	0	323	90	12.7	2705
	67	17	21200	16050	5150	323	91	12.7	2710
	72	12	21350	11150	10200	323	91	12.7	2705
	77	7	21450	6650	14800	324	92	12.7	2710

COOLING PERFORMANCE DATA

PCB / PGB30
1100 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
2700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	24	31900	29200	2700	149	81	10.6	2155
	67	19	32250	22600	9650	150	82	10.6	2155
	72	13	32500	16000	16500	149	82	10.6	2155
	77	8	32650	9950	22700	150	83	10.6	2155
65	62	24	31450	29050	2400	162	81	10.9	2240
	67	19	31850	22450	9400	162	82	10.9	2240
	72	13	32050	15900	16150	162	83	10.9	2240
	77	8	32250	9850	22400	162	83	10.9	2240
70	62	24	31050	28900	2150	175	82	11.2	2330
	67	19	31400	22300	9100	175	83	11.2	2330
	72	13	31600	15750	15850	176	83	11.2	2335
	77	8	31800	9750	22050	176	84	11.2	2335
75	62	24	30600	28700	1900	188	82	11.6	2425
	67	18	30950	22150	8800	189	83	11.6	2430
	72	13	31150	15600	15550	189	84	11.6	2430
	77	8	31350	9600	21750	189	84	11.6	2430
80	62	24	30150	28550	1600	203	83	12	2525
	67	18	30450	22000	8450	204	84	12	2530
	72	13	30700	15500	15200	204	85	12	2530
	77	8	30900	9500	21400	204	85	12	2530
85	62	24	29700	28350	1350	218	84	12.4	2635
	67	18	30000	21850	8150	218	84	12.4	2635
	72	13	30200	15350	14850	219	85	12.4	2635
	77	8	30400	9350	21050	219	86	12.4	2635
90	62	23	29200	28200	1000	234	84	12.9	2745
	67	18	29500	21650	7850	234	85	12.9	2745
	72	13	29700	15200	14500	235	86	12.9	2750
	77	8	29900	9250	20650	235	86	12.9	2750
95	62	23	28700	28000	700	250	85	13.4	2855
	67	18	29000	21500	7500	251	86	13.4	2865
	72	13	29200	15050	14150	251	86	13.4	2865
	77	8	29400	9100	20300	252	87	13.4	2870
100	62	23	28200	27800	400	267	85	13.9	2980
	67	18	28500	21350	7150	268	86	13.9	2985
	72	12	28700	14900	13800	268	87	13.9	2985
	77	7	28850	8950	19900	269	87	14	2990
105	62	23	27650	27650	0	285	86	14.5	3110
	67	18	27950	21150	6800	286	87	14.5	3115
	72	12	28200	14750	13450	286	88	14.5	3115
	77	7	28350	8850	19500	287	88	14.6	3120
110	62	23	27150	27150	0	304	87	15.2	3245
	67	17	27450	21000	6450	304	88	15.2	3250
	72	12	27650	14600	13050	304	88	15.2	3250
	77	7	27800	8700	19100	305	89	15.2	3255
115	62	23	26650	26650	0	323	87	15.8	3380
	67	17	26950	20800	6150	323	88	15.9	3390
	72	12	27150	14450	12700	324	89	15.9	3390
	77	7	27300	8600	18700	324	89	15.9	3395

COOLING PERFORMANCE DATA

PCB / PGB36
1300 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3060 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	25	40300	36200	4100	164	79	12.4	2650
	67	19	40800	28150	12650	165	80	12.4	2650
	72	14	41150	20150	21000	165	80	12.4	2650
	77	9	41400	12750	28650	166	81	12.4	2655
65	62	25	39600	35900	3700	177	80	12.8	2735
	67	19	40100	27900	12200	178	80	12.8	2735
	72	14	40350	19900	20450	179	81	12.8	2740
	77	9	40650	12550	28100	179	81	12.8	2740
70	62	25	38900	35650	3250	191	80	13.2	2830
	67	19	39350	27650	11700	192	81	13.2	2835
	72	14	39650	19700	19950	192	82	13.2	2835
	77	9	39900	12350	27550	193	82	13.2	2835
75	62	24	38200	35400	2800	206	81	13.6	2935
	67	19	38650	27400	11250	207	82	13.7	2940
	72	13	38950	19450	19500	207	82	13.7	2940
	77	8	39200	12150	27050	207	83	13.7	2945
80	62	24	37550	35150	2400	221	81	14.1	3050
	67	19	38000	27200	10800	222	82	14.2	3055
	72	13	38300	19250	19050	222	83	14.2	3060
	77	8	38500	11950	26550	222	83	14.2	3065
85	62	24	36900	34900	2000	237	82	14.7	3180
	67	19	37300	26950	10350	238	83	14.8	3185
	72	13	37600	19050	18550	238	83	14.8	3190
	77	8	37800	11800	26000	239	84	14.8	3195
90	62	24	36250	34650	1600	254	83	15.4	3320
	67	18	36650	26750	9900	254	83	15.4	3325
	72	13	36950	18850	18100	255	84	15.4	3325
	77	8	37150	11600	25550	255	84	15.4	3330
95	62	24	35600	34400	1200	272	83	16	3470
	67	18	36000	26500	9500	272	84	16	3470
	72	13	36250	18650	17600	273	85	16.1	3485
	77	8	36500	11450	25050	273	85	16.1	3485
100	62	24	34950	34150	800	290	84	16.7	3630
	67	18	35300	26250	9050	291	85	16.8	3640
	72	13	35550	18450	17100	291	85	16.8	3645
	77	8	35800	11250	24550	291	86	16.8	3645
105	62	23	34300	33900	400	308	84	17.5	3800
	67	18	34650	26050	8600	309	85	17.5	3810
	72	13	34850	18200	16650	310	86	17.6	3820
	77	8	35100	11050	24050	311	86	17.6	3825
110	62	23	33600	33600	0	329	85	18.3	3990
	67	18	33950	25800	8150	329	86	18.3	3995
	72	12	34200	18000	16200	329	86	18.4	4000
	77	8	34350	10900	23450	330	87	18.4	4010
115	62	23	32900	32900	0	350	86	19.2	4190
	67	18	33200	25550	7650	349	87	19.2	4190
	72	12	33400	17800	15600	350	87	19.3	4205
	77	7	33600	10700	22900	350	88	19.3	4205

COOLING PERFORMANCE DATA

PCB / PGB42
1400 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3500 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	25	44950	38450	6500	155	77	15.4	2985
	67	19	45450	30000	15450	155	78	15.4	2995
	72	14	45800	21550	24250	155	78	15.4	3000
	77	9	46050	13750	32300	156	79	15.4	3005
65	62	25	44300	38200	6100	167	77	15.8	3075
	67	19	44800	29750	15050	168	78	15.8	3085
	72	14	45100	21300	23800	168	79	15.9	3085
	77	9	45400	13550	31850	168	79	15.9	3085
70	62	25	43650	37950	5700	180	78	16.3	3180
	67	19	44100	29500	14600	181	79	16.3	3185
	72	14	44400	21100	23300	182	79	16.4	3190
	77	9	44700	13350	31350	182	80	16.3	3185
75	62	25	42950	37700	5250	194	79	16.8	3295
	67	19	43400	29300	14100	195	79	16.9	3300
	72	14	43700	20900	22800	195	80	16.9	3300
	77	9	43950	13150	30800	196	80	16.9	3305
80	62	24	42300	37450	4850	209	79	17.4	3420
	67	19	42700	29050	13650	209	80	17.4	3425
	72	13	43000	20700	22300	210	81	17.5	3430
	77	8	43250	13000	30250	210	81	17.5	3435
85	62	24	41550	37150	4400	225	80	18.1	3570
	67	19	42000	28800	13200	225	81	18.1	3575
	72	13	42250	20450	21800	225	81	18.1	3575
	77	8	42500	12800	29700	226	82	18.1	3580
90	62	24	40850	36900	3950	241	80	18.8	3730
	67	19	41250	28550	12700	241	81	18.8	3735
	72	13	41500	20250	21250	242	82	18.8	3740
	77	8	41750	12600	29150	241	82	18.8	3735
95	62	24	40150	36650	3500	257	81	19.5	3900
	67	18	40500	28300	12200	258	82	19.6	3910
	72	13	40750	20000	20750	258	82	19.6	3915
	77	8	41000	12400	28600	258	83	19.6	3910
100	62	24	39400	36350	3050	275	82	20.4	4095
	67	18	39750	28050	11700	275	83	20.4	4100
	72	13	40000	19800	20200	276	83	20.4	4100
	77	8	40200	12200	28000	276	84	20.4	4105
105	62	23	38650	36100	2550	293	82	21.2	4295
	67	18	38950	27800	11150	294	83	21.3	4305
	72	13	39150	19550	19600	294	84	21.3	4305
	77	8	39350	12000	27350	294	84	21.3	4310
110	62	23	37800	35800	2000	312	83	22.2	4520
	67	18	38150	27500	10650	312	84	22.1	4520
	72	13	38350	19300	19050	313	85	22.2	4525
	77	8	38500	11750	26750	313	85	22.2	4525
115	62	23	37000	35500	1500	331	84	23.1	4745
	67	18	37250	27200	10050	332	85	23.1	4745
	72	12	37450	19050	18400	332	85	23.2	4750
	77	7	37600	11550	26050	332	86	23.2	4745

COOLING PERFORMANCE DATA

PCB / PGB48
1700 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	26	55150	47600	7550	155	78	17	3705
	67	20	55650	37100	18550	156	79	17.1	3715
	72	15	55950	26650	29300	156	79	17.1	3715
	77	9	56250	17000	39250	157	80	17.1	3720
65	62	26	54000	47150	6850	168	79	17.6	3850
	67	20	54500	36700	17800	168	80	17.6	3855
	72	14	54800	26300	28500	169	80	17.7	3860
	77	9	55100	16700	38400	169	81	17.7	3860
70	62	26	52900	46700	6200	181	80	18.2	3990
	67	20	53350	36300	17050	181	80	18.2	4000
	72	14	53650	25950	27700	182	81	18.2	4005
	77	9	53950	16400	37550	182	81	18.3	4010
75	62	26	51750	46300	5450	195	80	18.8	4140
	67	20	52200	35900	16300	195	81	18.8	4150
	72	14	52500	25600	26900	195	82	18.8	4150
	77	9	52750	16050	36700	196	82	18.9	4155
80	62	25	50600	45850	4750	209	81	19.3	4280
	67	20	51050	35500	15550	209	82	19.4	4285
	72	14	51350	25200	26150	210	82	19.4	4295
	77	9	51600	15750	35850	210	83	19.4	4295
85	62	25	49500	45400	4100	223	82	19.9	4420
	67	19	49850	35100	14750	225	83	20	4435
	72	14	50150	24850	25300	225	83	20	4440
	77	9	50400	15450	34950	225	84	20	4445
90	62	25	48300	44950	3350	239	83	20.5	4570
	67	19	48700	34700	14000	239	83	20.6	4575
	72	13	48950	24500	24450	240	84	20.6	4590
	77	8	49200	15150	34050	241	84	20.6	4590
95	62	25	47100	44550	2550	255	84	21.1	4710
	67	19	47500	34300	13200	256	84	21.2	4725
	72	13	47800	24150	23650	256	85	21.2	4730
	77	8	48050	14800	33250	256	85	21.2	4735
100	62	24	45950	44100	1850	272	84	21.8	4855
	67	19	46350	33900	12450	272	85	21.8	4865
	72	13	46550	23800	22750	273	86	21.9	4875
	77	8	46800	14500	32300	273	86	21.9	4885
105	62	24	44700	43650	1050	289	85	22.4	5005
	67	18	45100	33500	11600	290	86	22.5	5020
	72	13	45350	23400	21950	290	86	22.5	5025
	77	8	45550	14200	31350	291	87	22.5	5035
110	62	24	43500	43200	300	307	86	23.1	5150
	67	18	43850	33050	10800	308	87	23.1	5165
	72	13	44100	23050	21050	308	87	23.2	5175
	77	8	44350	13850	30500	308	88	23.2	5180
115	62	24	42250	42250	0	326	87	23.7	5305
	67	18	42650	32650	10000	326	88	23.8	5315
	72	12	42850	22700	20150	327	88	23.8	5325
	77	7	43100	13550	29550	327	88	23.8	5335

COOLING PERFORMANCE DATA

PCB / PGB60
1750 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
4700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	29	66200	54050	12150	161	74	22.6	4655
	67	23	66950	42750	24200	162	75	22.7	4675
	72	17	67400	31350	36050	163	75	22.7	4680
	77	11	67850	20800	47050	163	76	22.7	4685
65	62	29	65350	53700	11650	174	74	23.3	4815
	67	23	66050	42400	23650	175	75	23.3	4825
	72	17	66500	31050	35450	176	76	23.4	4835
	77	11	66950	20550	46400	176	76	23.4	4835
70	62	29	64400	53350	11050	188	75	24	4985
	67	23	65150	42100	23050	189	76	24.1	5000
	72	17	65600	30750	34850	189	76	24.1	5000
	77	11	66000	20250	45750	190	77	24.1	5010
75	62	28	63500	53000	10500	202	76	24.8	5175
	67	22	64200	41750	22450	203	76	24.9	5190
	72	16	64650	30450	34200	204	77	25	5205
	77	11	65050	20000	45050	204	78	25	5205
80	62	28	62500	52550	9950	218	76	25.8	5400
	67	22	63200	41350	21850	218	77	25.8	5405
	72	16	63650	30100	33550	218	78	25.9	5410
	77	11	64050	19700	44350	219	78	25.9	5415
85	62	28	61500	52150	9350	233	77	26.8	5640
	67	22	62150	41000	21150	234	78	26.9	5650
	72	16	62600	29750	32850	234	78	26.9	5655
	77	10	63000	19400	43600	235	79	26.9	5660
90	62	28	60450	51750	8700	249	77	27.9	5890
	67	22	61100	40600	20500	250	78	28	5905
	72	16	61550	29400	32150	250	79	28	5910
	77	10	61900	19100	42800	251	79	28.1	5920
95	62	28	59350	51300	8050	267	78	29.2	6175
	67	22	60000	40200	19800	267	79	29.2	6180
	72	16	60350	29050	31300	268	80	29.3	6200
	77	10	60750	18750	42000	268	80	29.3	6200
100	62	27	58200	50850	7350	285	79	30.5	6485
	67	21	58800	39750	19050	285	80	30.5	6490
	72	15	59250	28700	30550	285	80	30.5	6490
	77	10	59550	18450	41100	286	81	30.6	6500
105	62	27	57000	50400	6600	302	80	31.9	6800
	67	21	57600	39350	18250	303	80	31.9	6810
	72	15	57950	28250	29700	304	81	32	6820
	77	10	58300	18100	40200	304	82	32	6820
110	62	27	55700	49850	5850	321	80	33.4	7145
	67	21	56250	38850	17400	322	81	33.4	7155
	72	15	56600	27850	28750	323	82	33.5	7170
	77	10	56950	17700	39250	323	82	33.5	7170
115	62	27	54300	49350	4950	341	81	35	7515
	67	21	54850	38350	16500	342	82	35	7525
	72	15	55200	27400	27800	342	83	35	7525
	77	9	55450	17300	38150	343	83	35.1	7535

COOLING PERFORMANCE DATA

PGC24B

850 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
2670 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	24	26600	22700	3900	150	83	7.8	1480
	67	19	26750	17600	9150	150	84	7.8	1485
	72	14	26900	12600	14300	150	84	7.8	1485
	77	9	27050	7950	19100	150	84	7.8	1485
65	62	24	26200	22550	3650	162	83	8.1	1555
	67	19	26450	17500	8950	162	84	8.1	1555
	72	13	26550	12500	14050	163	85	8.1	1560
	77	8	26700	7850	18850	163	85	8.1	1560
70	62	24	25850	22400	3450	175	84	8.4	1635
	67	19	26050	17400	8650	176	85	8.4	1635
	72	13	26200	12350	13850	176	85	8.4	1635
	77	8	26300	7750	18550	176	86	8.4	1635
75	62	24	25450	22250	3200	189	84	8.8	1715
	67	19	25650	17250	8400	189	85	8.8	1715
	72	13	25800	12250	13550	189	86	8.8	1715
	77	8	25950	7650	18300	190	86	8.8	1720
80	62	24	25050	22150	2900	203	85	9.2	1800
	67	18	25250	17100	8150	204	86	9.2	1805
	72	13	25400	12150	13250	204	86	9.2	1805
	77	8	25550	7550	18000	204	87	9.2	1805
85	62	24	24650	22000	2650	219	86	9.6	1895
	67	18	24850	17000	7850	219	86	9.6	1895
	72	13	25000	12000	13000	219	87	9.6	1900
	77	8	25100	7450	17650	220	87	9.6	1900
90	62	24	24250	21850	2400	234	86	10.0	1990
	67	18	24450	16850	7600	235	87	10.0	1995
	72	13	24550	11900	12650	235	87	10.0	1995
	77	8	24700	7350	17350	235	88	10.0	2000
95	62	23	23800	21650	2150	251	87	10.4	2095
	67	18	24000	16700	7300	251	88	10.4	2095
	72	13	24150	11750	12400	251	88	10.4	2095
	77	8	24250	7250	17000	252	89	10.5	2100
100	62	23	23350	21500	1850	268	88	10.9	2200
	67	18	23550	16550	7000	268	88	10.9	2200
	72	13	23650	11650	12000	269	89	10.9	2205
	77	8	23800	7100	16700	268	89	10.9	2205
105	62	23	22850	21300	1550	285	88	11.4	2310
	67	18	23050	16400	6650	286	89	11.4	2315
	72	12	23150	11500	11650	286	90	11.4	2320
	77	8	23250	7000	16250	287	90	11.5	2320
110	62	23	22350	21150	1200	304	89	12.0	2430
	67	17	22500	16200	6300	304	90	12.0	2435
	72	12	22650	11350	11300	305	90	12.0	2435
	77	7	22750	6850	15900	305	91	12.0	2435
115	62	23	21800	20950	850	323	90	12.5	2550
	67	17	22000	16050	5950	323	91	12.5	2555
	72	12	22100	11200	10900	324	91	12.5	2555
	77	7	22200	6750	15450	324	92	12.5	2555

COOLING PERFORMANCE DATA

PGC30B
1100 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
2700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	24	32900	29150	3750	149	81	10.1	1910
	67	19	33300	22600	10700	149	82	10.1	1910
	72	13	33500	16050	17450	150	82	10.1	1915
	77	8	33700	10050	23650	150	83	10.1	1915
65	62	24	32500	28950	3550	161	81	10.4	1995
	67	19	32850	22450	10400	162	82	10.4	1995
	72	13	33050	15950	17100	162	83	10.4	2000
	77	8	33300	9950	23350	162	83	10.4	1995
70	62	24	32050	28800	3250	175	82	10.7	2085
	67	19	32400	22300	10100	175	83	10.7	2090
	72	13	32650	15800	16850	175	83	10.7	2090
	77	8	32850	9850	23000	175	84	10.7	2090
75	62	24	31650	28650	3000	188	82	11.1	2180
	67	18	31950	22150	9800	189	83	11.1	2185
	72	13	32200	15700	16500	189	84	11.1	2185
	77	8	32400	9750	22650	189	84	11.1	2185
80	62	24	31150	28500	2650	203	83	11.5	2285
	67	18	31500	22000	9500	204	84	11.5	2285
	72	13	31700	15550	16150	204	85	11.5	2290
	77	8	31900	9600	22300	203	85	11.5	2285
85	62	24	30700	28300	2400	218	84	11.9	2390
	67	18	31050	21850	9200	218	84	11.9	2390
	72	13	31200	15400	15800	219	85	11.9	2395
	77	8	31400	9500	21900	219	86	11.9	2390
90	62	23	30200	28100	2100	234	84	12.4	2500
	67	18	30500	21650	8850	234	85	12.4	2500
	72	13	30700	15250	15450	235	86	12.4	2505
	77	8	30900	9350	21550	234	86	12.4	2500
95	62	23	29700	27950	1750	250	85	12.9	2620
	67	18	30000	21500	8500	251	86	12.9	2620
	72	13	30250	15100	15150	250	86	12.9	2620
	77	8	30400	9200	21200	251	87	12.9	2620
100	62	23	29200	27750	1450	267	85	13.4	2740
	67	18	29500	21350	8150	268	86	13.4	2745
	72	12	29700	14950	14750	268	87	13.4	2740
	77	8	29850	9100	20750	269	87	13.5	2745
105	62	23	28700	27550	1150	285	86	14.0	2865
	67	18	28950	21150	7800	286	87	14.0	2870
	72	12	29200	14800	14400	286	88	14.0	2870
	77	7	29350	8950	20400	287	88	14.1	2880
110	62	23	28150	27350	800	304	87	14.6	3000
	67	17	28450	21000	7450	304	88	14.7	3005
	72	12	28650	14650	14000	304	88	14.7	3005
	77	7	28800	8800	20000	305	89	14.7	3010
115	62	23	27650	27200	450	323	87	15.3	3140
	67	17	27900	20800	7100	324	88	15.4	3150
	72	12	28100	14500	13600	324	89	15.4	3155
	77	7	28300	8700	19600	324	89	15.4	3150

COOLING PERFORMANCE DATA

PGC36B
1300 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3060 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	25	40200	36150	4050	164	79	12.7	2495
	67	19	40750	28150	12600	164	80	12.7	2495
	72	14	41100	20150	20950	165	80	12.7	2495
	77	9	41350	12750	28600	166	81	12.7	2500
65	62	25	39500	35900	3600	177	80	13.1	2580
	67	19	40000	27900	12100	178	80	13.1	2580
	72	14	40350	19900	20450	178	81	13.1	2585
	77	9	40600	12550	28050	179	81	13.1	2585
70	62	25	38850	35650	3200	191	80	13.5	2675
	67	19	39300	27650	11650	192	81	13.5	2675
	72	14	39650	19700	19950	192	82	13.5	2680
	77	9	39850	12350	27500	193	82	13.5	2680
75	62	24	38150	35350	2800	206	81	14.0	2785
	67	19	38650	27400	11250	206	82	14.0	2785
	72	13	38900	19450	19450	207	82	14.0	2785
	77	8	39150	12150	27000	207	83	14.0	2790
80	62	24	37550	35150	2400	221	81	14.5	2895
	67	19	37950	27200	10750	222	82	14.5	2900
	72	13	38250	19250	19000	222	83	14.5	2905
	77	8	38450	11950	26500	223	83	14.5	2910
85	62	24	36900	34900	2000	237	82	15.0	3025
	67	19	37300	26950	10350	238	83	15.1	3035
	72	13	37550	19050	18500	238	83	15.1	3035
	77	8	37800	11800	26000	238	84	15.1	3035
90	62	24	36250	34650	1600	254	83	15.7	3165
	67	18	36650	26700	9950	255	83	15.7	3170
	72	13	36900	18850	18050	255	84	15.7	3175
	77	8	37100	11600	25500	256	84	15.7	3180
95	62	24	35600	34400	1200	272	83	16.3	3315
	67	18	36000	26500	9500	272	84	16.4	3320
	72	13	36250	18650	17600	272	85	16.4	3325
	77	8	36450	11400	25050	273	85	16.4	3335
100	62	24	34950	34150	800	290	84	17.1	3480
	67	18	35350	26250	9100	290	85	17.1	3480
	72	13	35600	18450	17150	291	85	17.1	3485
	77	8	35800	11250	24550	292	86	17.1	3495
105	62	23	34300	33900	400	309	84	17.8	3650
	67	18	34700	26050	8650	309	85	17.8	3655
	72	13	34900	18250	16650	309	86	17.8	3660
	77	8	35100	11050	24050	311	86	17.9	3670
110	62	23	33650	33650	0	329	85	18.6	3835
	67	18	34000	25800	8200	329	86	18.7	3840
	72	12	34200	18000	16200	330	86	18.7	3855
	77	8	34400	10900	23500	330	87	18.7	3855
115	62	23	32950	32950	0	349	86	19.5	4025
	67	18	33250	25550	7700	349	87	19.5	4035
	72	12	33450	17800	15650	351	87	19.6	4050
	77	7	33650	10700	22950	351	88	19.6	4055

COOLING PERFORMANCE DATA

PGC42B
1400 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3500 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	25	44850	38400	6450	155	77	14.9	2715
	67	19	45350	29950	15400	155	78	14.9	2720
	72	14	45700	21500	24200	155	78	14.9	2725
	77	9	45950	13700	32250	156	79	15.0	2730
65	62	25	44200	38150	6050	167	77	15.3	2805
	67	19	44700	29750	14950	168	78	15.4	2810
	72	14	45000	21300	23700	168	79	15.4	2815
	77	9	45300	13500	31800	168	79	15.4	2815
70	62	25	43600	37900	5700	180	78	15.8	2905
	67	19	44000	29500	14500	181	79	15.8	2910
	72	14	44350	21100	23250	181	79	15.8	2910
	77	9	44600	13350	31250	182	80	15.9	2915
75	62	24	42900	37650	5250	195	79	16.4	3020
	67	19	43350	29250	14100	195	79	16.4	3030
	72	14	43650	20900	22750	195	80	16.4	3025
	77	9	43900	13150	30750	196	80	16.4	3030
80	62	24	42250	37400	4850	209	79	17.0	3150
	67	19	42650	29050	13600	209	80	17.0	3150
	72	13	42950	20650	22300	210	81	17.0	3155
	77	8	43150	12950	30200	210	81	17.0	3160
85	62	24	41550	37150	4400	224	80	17.6	3295
	67	19	41950	28800	13150	225	81	17.6	3300
	72	13	42200	20450	21750	226	81	17.6	3305
	77	8	42450	12800	29650	226	82	17.6	3305
90	62	24	40850	36900	3950	240	80	18.3	3450
	67	19	41250	28550	12700	241	81	18.3	3455
	72	13	41500	20250	21250	241	82	18.3	3460
	77	8	41700	12600	29100	242	82	18.4	3470
95	62	24	40150	36650	3500	257	81	19.0	3630
	67	18	40500	28300	12200	258	82	19.1	3635
	72	13	40750	20000	20750	258	82	19.1	3640
	77	8	41000	12400	28600	258	83	19.1	3640
100	62	24	39400	36350	3050	275	82	19.9	3820
	67	18	39750	28050	11700	275	83	19.9	3825
	72	13	40000	19800	20200	276	83	19.9	3830
	77	8	40200	12200	28000	276	84	19.9	3835
105	62	23	38650	36100	2550	293	82	20.7	4020
	67	18	39000	27800	11200	293	83	20.7	4025
	72	13	39200	19550	19650	293	84	20.7	4030
	77	8	39400	12000	27400	294	84	20.8	4035
110	62	23	37900	35800	2100	312	83	21.6	4240
	67	18	38200	27500	10700	313	84	21.7	4250
	72	13	38400	19300	19100	313	85	21.7	4250
	77	8	38550	11750	26800	313	85	21.7	4250
115	62	23	37100	35500	1600	331	84	22.6	4470
	67	18	37350	27250	10100	332	85	22.6	4470
	72	12	37500	19050	18450	332	85	22.7	4475
	77	8	37650	11550	26100	332	86	22.7	4470

COOLING PERFORMANCE DATA

PGC48B
1700 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3700 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	26	54300	47500	6800	156	78	15.2	3175
	67	20	54750	37000	17750	156	79	15.3	3180
	72	15	55050	26500	28550	156	79	15.3	3185
	77	9	55350	16850	38500	156	80	15.3	3185
65	62	26	53250	47100	6150	168	79	15.8	3320
	67	20	53700	36600	17100	168	80	15.9	3325
	72	14	53950	26150	27800	169	80	15.9	3330
	77	9	54250	16550	37700	169	81	15.9	3330
70	62	26	52100	46650	5450	181	80	16.4	3465
	67	20	52600	36200	16400	182	80	16.4	3470
	72	14	52900	25800	27100	182	81	16.5	3470
	77	9	53150	16250	36900	182	81	16.5	3475
75	62	25	51050	46250	4800	194	80	17.0	3605
	67	20	51450	35850	15600	195	81	17.0	3615
	72	14	51750	25500	26250	196	82	17.0	3620
	77	9	52000	15950	36050	196	82	17.1	3625
80	62	25	49950	45800	4150	209	81	17.6	3755
	67	20	50400	35450	14950	209	82	17.6	3755
	72	14	50650	25150	25500	210	82	17.6	3760
	77	9	50900	15650	35250	210	83	17.7	3770
85	62	25	48900	45400	3500	224	82	18.1	3890
	67	19	49250	35050	14200	224	83	18.2	3905
	72	14	49550	24800	24750	225	83	18.2	3910
	77	8	49800	15350	34450	225	84	18.2	3915
90	62	25	47750	45000	2750	239	83	18.7	4035
	67	19	48100	34700	13400	240	84	18.8	4050
	72	13	48400	24450	23950	240	84	18.8	4050
	77	8	48650	15050	33600	240	84	18.8	4060
95	62	25	46650	44550	2100	255	84	19.4	4180
	67	19	47000	34300	12700	256	84	19.4	4190
	72	13	47250	24100	23150	256	85	19.5	4200
	77	8	47500	14750	32750	256	85	19.5	4205
100	62	24	45500	44150	1350	272	84	20.0	4325
	67	19	45850	33900	11950	273	85	20.0	4340
	72	13	46100	23750	22350	273	86	20.1	4345
	77	8	46300	14450	31850	273	86	20.1	4355
105	62	24	44350	43700	650	289	85	20.6	4475
	67	18	44700	33500	11200	290	86	20.7	4490
	72	13	44950	23400	21550	290	86	20.7	4495
	77	8	45150	14150	31000	290	87	20.8	4500
110	62	24	43200	43200	0	307	86	21.3	4620
	67	18	43550	33150	10400	308	87	21.3	4635
	72	13	43800	23050	20750	308	87	21.4	4645
	77	8	43950	13850	30100	309	88	21.4	4655
115	62	24	42050	42050	0	326	87	21.9	4770
	67	18	42350	32750	9600	326	88	22.0	4785
	72	13	42550	22700	19850	327	88	22.0	4795
	77	7	42800	13550	29250	327	88	22.0	4805

COOLING PERFORMANCE DATA

SPHO / PHA24
900 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
2900 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	27	29950	26700	3250	141	80	9.9	2255
	67	21	30200	20850	9350	142	80	10	2260
	72	15	30300	15000	15300	142	80	10	2265
	77	10	30450	9600	20850	142	81	10	2265
65	62	27	29300	26400	2900	153	80	10.3	2320
	67	21	29550	20600	8950	153	81	10.3	2325
	72	15	29650	14800	14850	153	81	10.3	2330
	77	10	29800	9450	20350	154	82	10.3	2330
70	62	27	28650	26150	2500	165	81	10.6	2385
	67	21	28850	20350	8500	165	82	10.6	2390
	72	15	29000	14550	14450	165	82	10.6	2395
	77	9	29100	9250	19850	166	82	10.6	2395
75	62	26	28000	25900	2100	177	82	10.9	2450
	67	20	28150	20100	8050	178	83	10.9	2455
	72	15	28300	14350	13950	178	83	10.9	2460
	77	9	28450	9050	19400	178	83	11	2460
80	62	26	27300	25600	1700	191	83	11.2	2520
	67	20	27500	19850	7650	191	83	11.2	2520
	72	14	27600	14100	13500	191	84	11.3	2525
	77	9	27750	8850	18900	191	84	11.3	2530
85	62	26	26600	25350	1250	204	84	11.5	2585
	67	20	26800	19600	7200	205	84	11.6	2590
	72	14	26950	13900	13050	205	85	11.6	2595
	77	9	27050	8650	18400	205	85	11.6	2595
90	62	25	25900	25100	800	218	85	11.8	2655
	67	20	26100	19350	6750	219	85	11.9	2660
	72	14	26200	13700	12500	219	85	11.9	2660
	77	9	26300	8450	17850	219	86	11.9	2665
95	62	25	25200	24800	400	233	85	12.1	2725
	67	19	25350	19100	6250	234	86	12.2	2730
	72	14	25500	13450	12050	234	86	12.2	2730
	77	8	25600	8250	17350	234	87	12.2	2735
100	62	25	24500	24500	0	249	86	12.4	2795
	67	19	24650	18850	5800	249	87	12.5	2800
	72	13	24750	13200	11550	250	87	12.5	2805
	77	8	24850	8050	16800	250	88	12.5	2810
105	62	25	23700	23700	0	265	87	12.7	2870
	67	19	23900	18600	5300	265	88	12.8	2875
	72	13	24000	13000	11000	266	88	12.8	2880
	77	8	24100	7850	16250	266	88	12.8	2880
110	62	24	22950	22950	0	282	88	13	2945
	67	19	23150	18300	4850	282	89	13.1	2950
	72	13	23250	12750	10500	282	89	13.1	2955
	77	8	23300	7650	15650	282	89	13.1	2955
115	62	24	22200	22200	0	299	89	13.3	3020
	67	18	22350	18050	4300	299	90	13.4	3025
	72	13	22450	12500	9950	299	90	13.4	3030
	77	8	22500	7450	15050	300	91	13.4	3035

COOLING PERFORMANCE DATA

SPHO / PHA30
1100 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
2900 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER	
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	AMPS	WATTS
60	62	25	33850	30750	3100	152	77	11.8	2580
	67	20	34200	23900	10300	152	77	11.8	2585
	72	14	34400	17050	17350	153	78	11.8	2590
	77	9	34600	10750	23850	153	78	11.8	2590
65	62	25	33150	30450	2700	164	78	12.1	2670
	67	20	33450	23600	9850	165	78	12.1	2675
	72	14	33700	16800	16900	164	79	12.1	2675
	77	9	33850	10550	23300	165	79	12.2	2680
70	62	25	32400	30150	2250	177	78	12.5	2760
	67	19	32700	23350	9350	177	79	12.5	2765
	72	14	32900	16550	16350	177	79	12.5	2770
	77	9	33100	10350	22750	178	80	12.5	2770
75	62	25	31650	29900	1750	190	79	12.8	2845
	67	19	31950	23100	8850	191	80	12.9	2855
	72	14	32150	16350	15800	191	80	12.9	2860
	77	8	32300	10100	22200	191	81	12.9	2865
80	62	25	30900	29600	1300	204	80	13.2	2935
	67	19	31150	22800	8350	205	81	13.2	2945
	72	13	31350	16100	15250	205	81	13.3	2950
	77	8	31550	9900	21650	205	81	13.3	2950
85	62	24	30100	29300	800	219	81	13.6	3025
	67	19	30400	22550	7850	219	81	13.6	3030
	72	13	30550	15850	14700	220	82	13.6	3035
	77	8	30750	9700	21050	220	82	13.6	3040
90	62	24	29350	29000	350	234	81	13.9	3110
	67	18	29600	22300	7300	234	82	14	3120
	72	13	29800	15600	14200	235	83	14	3125
	77	8	29950	9500	20450	234	83	14	3125
95	62	24	28550	28550	0	249	82	14.3	3195
	67	18	28800	22000	6800	250	83	14.3	3205
	72	13	28950	15350	13600	250	83	14.4	3210
	77	8	29100	9250	19850	250	84	14.4	3215
100	62	24	27750	27750	0	265	83	14.7	3280
	67	18	27950	21700	6250	266	84	14.7	3295
	72	13	28150	15100	13050	266	84	14.7	3295
	77	8	28300	9050	19250	266	85	14.8	3300
105	62	23	26900	26900	0	283	84	15.1	3370
	67	18	27150	21450	5700	283	85	15.1	3375
	72	12	27300	14850	12450	283	85	15.1	3385
	77	7	27450	8850	18600	284	86	15.2	3390
110	62	23	26050	26050	0	300	85	15.5	3455
	67	18	26300	21150	5150	300	86	15.5	3465
	72	12	26450	14600	11850	300	86	15.5	3470
	77	7	26600	8600	18000	300	86	15.5	3475
115	62	23	25200	25200	0	318	86	15.9	3540
	67	17	25400	20850	4550	319	87	15.9	3555
	72	12	25550	14350	11200	319	87	15.9	3560
	77	7	25700	8400	17300	319	87	15.9	3565

COOLING PERFORMANCE DATA

SPHO / PHA36
1270 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3060 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	26	38400	35400	3000	152	81	13.3	9.1	2940	2780
	67	20	38850	27500	11350	153	82	13.4	9.1	2950	2790
	72	14	39150	19600	19550	153	82	13.4	9.1	2955	2790
	77	9	39350	12300	27050	154	83	13.4	9.1	2960	2800
65	62	25	37600	35100	2500	164	82	13.8	9.5	3045	2915
	67	20	38000	27200	10800	165	83	13.8	9.5	3055	2925
	72	14	38300	19300	19000	165	83	13.8	9.6	3060	2930
	77	9	38550	12100	26450	165	84	13.8	9.5	3060	2930
70	62	25	36700	34750	1950	177	83	14.2	9.9	3150	3045
	67	19	37150	26900	10250	178	83	14.2	10.0	3155	3055
	72	14	37400	19050	18350	178	84	14.3	10.0	3165	3055
	77	9	37650	11850	25800	178	84	14.3	10.0	3165	3060
75	62	25	35900	34400	1500	190	83	14.6	10.3	3250	3175
	67	19	36300	26600	9700	191	84	14.7	10.3	3255	3180
	72	14	36550	18800	17750	191	85	14.7	10.4	3265	3190
	77	8	36800	11600	25200	191	85	14.7	10.4	3270	3190
80	62	25	35050	34100	950	204	84	15.1	10.7	3345	3290
	67	19	35450	26300	9150	204	85	15.1	10.7	3355	3300
	72	13	35650	18500	17150	205	86	15.1	10.7	3365	3310
	77	8	35900	11350	24550	205	86	15.1	10.8	3370	3315
85	62	24	34150	33750	400	218	85	15.5	11.1	3445	3415
	67	19	34500	25950	8550	219	86	15.5	11.1	3460	3425
	72	13	34750	18250	16500	219	86	15.6	11.1	3465	3430
	77	8	35000	11150	23850	219	87	15.6	11.1	3470	3435
90	62	24	33250	33250	0	233	86	15.9	11.4	3545	3530
	67	19	33600	25650	7950	234	87	16.0	11.4	3555	3545
	72	13	33850	17950	15900	234	87	16.0	11.5	3565	3550
	77	8	34050	10900	23150	234	88	16.0	11.5	3570	3555
95	62	24	32350	32350	0	249	87	16.3	11.7	3645	3645
	67	18	32700	25350	7350	249	88	16.4	11.8	3655	3660
	72	13	32900	17650	15250	250	88	16.4	11.8	3665	3665
	77	8	33100	10650	22450	250	89	16.4	11.8	3670	3675
100	62	24	31450	31450	0	265	88	16.8	12.0	3740	3760
	67	18	31750	25050	6700	265	89	16.8	12.1	3755	3770
	72	13	32000	17400	14600	265	89	16.8	12.1	3765	3780
	77	7	32150	10400	21750	266	90	16.9	12.1	3775	3785
105	62	23	30500	30500	0	281	89	17.2	12.3	3840	3865
	67	18	30800	24700	6100	282	90	17.3	12.4	3855	3880
	72	12	31000	17100	13900	282	90	17.3	12.4	3865	3890
	77	7	31200	10150	21050	282	91	17.3	12.4	3870	3895
110	62	23	29550	29550	0	298	90	17.6	12.6	3940	3980
	67	18	29800	24350	5450	299	91	17.7	12.6	3955	3990
	72	12	30050	16800	13250	299	91	17.7	12.7	3965	4000
	77	7	30200	9900	20300	300	92	17.8	12.7	3975	4005
115	62	23	28550	28550	0	316	91	18.1	12.9	4035	4085
	67	17	28850	24050	4800	317	92	18.2	12.9	4055	4100
	72	12	29000	16500	12500	317	92	18.2	12.9	4065	4105
	77	7	29150	9600	19550	317	93	18.2	13.0	4075	4115

COOLING PERFORMANCE DATA

SPHO / PHA42
1400 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
3875 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	28	49600	42500	7100	154	77	16.2	11.9	3530	3525
	67	22	50050	33350	16700	154	78	16.3	11.9	3540	3530
	72	16	50350	24250	26100	154	78	16.3	11.9	3545	3535
	77	10	50650	15800	34850	154	78	16.3	11.9	3550	3540
65	62	28	48400	42000	6400	166	78	16.8	12.2	3660	3645
	67	22	48800	32900	15900	166	78	16.9	12.2	3670	3660
	72	16	49100	23850	25250	166	79	16.9	12.2	3675	3660
	77	10	49350	15450	33900	166	79	16.9	12.2	3680	3665
70	62	27	47150	41500	5650	178	79	17.4	12.4	3790	3775
	67	21	47600	32450	15150	179	79	17.4	12.5	3800	3785
	72	15	47800	23400	24400	179	80	17.5	12.5	3805	3790
	77	10	48100	15050	33050	179	80	17.5	12.5	3810	3795
75	62	27	45850	40950	4900	192	80	17.9	12.7	3920	3900
	67	21	46250	31950	14300	192	80	18.0	12.7	3930	3910
	72	15	46500	23000	23500	192	81	18.0	12.8	3935	3915
	77	10	46800	14700	32100	192	81	18.0	12.8	3940	3925
80	62	27	44600	40450	4150	205	81	18.5	13.0	4040	4030
	67	21	45000	31500	13500	206	81	18.5	13.0	4050	4040
	72	15	45200	22550	22650	206	82	18.6	13.0	4060	4045
	77	9	45450	14350	31100	206	82	18.6	13.1	4065	4055
85	62	26	43300	39950	3350	220	82	19.0	13.3	4165	4155
	67	20	43650	31050	12600	220	82	19.1	13.3	4175	4165
	72	15	43900	22150	21750	220	83	19.1	13.3	4180	4175
	77	9	44100	13950	30150	220	83	19.1	13.4	4190	4175
90	62	26	41950	39450	2500	234	83	19.5	13.6	4285	4280
	67	20	42300	30550	11750	235	83	19.6	13.6	4295	4295
	72	14	42550	21700	20850	235	84	19.6	13.7	4300	4295
	77	9	42750	13550	29200	236	84	19.6	13.7	4310	4305
95	62	25	40650	38900	1750	250	84	20.0	13.9	4400	4400
	67	20	41000	30100	10900	250	84	20.1	13.9	4410	4410
	72	14	41200	21300	19900	251	85	20.1	14.0	4425	4425
	77	9	41350	13200	28150	251	85	20.1	14.0	4430	4430
100	62	25	39300	38350	950	266	85	20.5	14.2	4520	4520
	67	19	39600	29600	10000	266	85	20.6	14.3	4535	4535
	72	14	39850	20850	19000	266	86	20.6	14.3	4540	4545
	77	8	40000	12850	27150	267	86	20.6	14.3	4545	4550
105	62	25	37950	37850	100	282	86	21.0	14.6	4635	4645
	67	19	38250	29100	9150	283	86	21.0	14.6	4650	4655
	72	13	38450	20400	18050	283	87	21.1	14.6	4655	4665
	77	8	38600	12450	26150	283	87	21.1	14.6	4665	4670
110	62	24	36550	36550	0	299	87	21.5	14.8	4755	4760
	67	19	36850	28600	8250	300	88	21.5	14.9	4770	4775
	72	13	37050	20000	17050	300	88	21.6	14.9	4780	4785
	77	8	37200	12100	25100	300	88	21.6	14.9	4790	4795
115	62	24	35150	35150	0	317	88	21.9	15.1	4880	4885
	67	18	35450	28150	7300	317	89	22.0	15.1	4895	4900
	72	13	35600	19550	16050	318	89	22.0	15.1	4910	4910
	77	8	35800	11700	24100	317	89	22.0	15.1	4915	4915

COOLING PERFORMANCE DATA

SPHO / PHA48
1700 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
4500 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	27	58950	50650	8300	150	77	18.8	14.2	4170	4165
	67	21	59600	39750	19850	150	78	18.9	14.2	4175	4175
	72	16	60100	28850	31250	150	78	18.9	14.2	4180	4180
	77	10	60500	18750	41750	151	79	18.9	14.2	4180	4185
65	62	27	57700	50150	7550	161	78	19.7	14.8	4355	4360
	67	21	58300	39300	19000	162	78	19.7	14.8	4365	4370
	72	15	58750	28400	30350	162	79	19.8	14.8	4370	4375
	77	10	59100	18350	40750	163	79	19.8	14.8	4380	4380
70	62	27	56350	49600	6750	174	79	20.6	15.3	4545	4545
	67	21	56950	38800	18150	175	79	20.6	15.4	4555	4555
	72	15	57400	27950	29450	175	80	20.6	15.4	4560	4565
	77	10	57750	17950	39800	175	80	20.7	15.4	4565	4565
75	62	26	54950	49050	5900	187	79	21.4	15.9	4725	4725
	67	21	55600	38300	17300	187	80	21.4	15.9	4735	4735
	72	15	56000	27500	28500	188	81	21.5	15.9	4745	4745
	77	9	56300	17550	38750	188	81	21.5	16.0	4750	4755
80	62	26	53600	48500	5100	201	80	22.2	16.4	4900	4905
	67	20	54200	37800	16400	201	81	22.3	16.4	4915	4915
	72	15	54550	27050	27500	202	82	22.3	16.5	4925	4920
	77	9	54900	17150	37750	202	82	22.3	16.5	4930	4930
85	62	26	52150	47950	4200	215	81	23.0	16.9	5075	5075
	67	20	52750	37300	15450	215	82	23.0	17.0	5085	5090
	72	14	53050	26600	26450	216	82	23.1	17.0	5100	5095
	77	9	53400	16750	36650	216	83	23.1	17.0	5105	5105
90	62	26	50700	47400	3300	230	82	23.7	17.4	5245	5245
	67	20	51250	36750	14500	230	83	23.8	17.5	5260	5260
	72	14	51600	26100	25500	230	83	23.9	17.5	5270	5270
	77	9	51850	16350	35500	231	84	23.9	17.5	5275	5275
95	62	25	49150	46800	2350	245	83	24.5	17.9	5410	5410
	67	20	49700	36200	13500	245	84	24.5	17.9	5425	5425
	72	14	50050	25650	24400	246	84	24.6	18.0	5435	5435
	77	9	50350	15950	34400	246	85	24.6	18.0	5440	5450
100	62	25	47700	46200	1500	260	84	25.1	18.3	5570	5570
	67	19	48150	35650	12500	261	85	25.2	18.4	5590	5585
	72	14	48450	25150	23300	261	85	25.3	18.4	5600	5600
	77	8	48700	15500	33200	262	86	25.3	18.4	5610	5610
105	62	25	46100	45600	500	277	85	25.8	18.7	5730	5730
	67	19	46550	35100	11450	278	86	25.9	18.8	5750	5750
	72	13	46850	24650	22200	278	86	25.9	18.8	5760	5760
	77	8	47150	15050	32100	278	87	26.0	18.9	5765	5770
110	62	24	44500	44500	0	294	86	26.4	19.1	5885	5885
	67	19	44950	34550	10400	294	87	26.5	19.2	5905	5910
	72	13	45250	24150	21100	294	88	26.5	19.2	5915	5920
	77	8	45500	14650	30850	295	88	26.6	19.3	5930	5930
115	62	24	42900	42900	0	311	87	27.0	19.5	6040	6040
	67	18	43300	33950	9350	312	88	27.0	19.6	6060	6065
	72	13	43600	23650	19950	312	89	27.1	19.6	6075	6075
	77	8	43800	14200	29600	312	89	27.1	19.6	6085	6085

COOLING PERFORMANCE DATA

SPHO / PHA60
1800 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
4500 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	28	66250	54200	12050	157	75	24.4	18.5	5330	5290
	67	22	67100	42800	24300	157	75	24.5	18.5	5355	5305
	72	16	67650	31300	36350	157	76	24.6	18.6	5360	5315
	77	11	68100	20650	47450	158	77	24.6	18.6	5380	5320
65	62	27	64950	53650	11300	168	75	25.5	18.9	5550	5515
	67	22	65700	42300	23400	169	76	25.6	19.0	5575	5530
	72	16	66250	30850	35400	170	77	25.7	19.0	5585	5540
	77	10	66650	20250	46400	170	77	25.7	19.1	5600	5550
70	62	27	63550	53100	10450	181	76	26.5	19.4	5760	5735
	67	21	64300	41750	22550	182	77	26.6	19.5	5780	5750
	72	15	64800	30400	34400	182	78	26.7	19.5	5795	5755
	77	10	65250	19850	45400	183	78	26.7	19.5	5805	5770
75	62	27	62150	52550	9600	195	77	27.4	19.9	5955	5940
	67	21	62900	41250	21650	195	78	27.5	19.9	5975	5955
	72	15	63350	29900	33450	196	78	27.6	20.0	5990	5970
	77	10	63800	19450	44350	196	79	27.6	20.0	6000	5975
80	62	26	60650	52000	8650	209	78	28.3	20.4	6150	6135
	67	21	61450	40750	20700	209	79	28.4	20.4	6160	6155
	72	15	61900	29450	32450	209	79	28.5	20.4	6180	6165
	77	10	62300	19000	43300	210	80	28.5	20.5	6190	6185
85	62	26	59200	51400	7800	223	79	29.1	20.8	6325	6325
	67	20	59900	40200	19700	224	80	29.2	20.9	6350	6350
	72	15	60400	28950	31450	224	80	29.3	20.9	6360	6365
	77	9	60800	18600	42200	224	81	29.4	21.0	6375	6375
90	62	26	57750	50850	6900	237	80	29.9	21.3	6500	6510
	67	20	58400	39650	18750	238	81	30.1	21.4	6535	6535
	72	14	58800	28450	30350	239	81	30.1	21.4	6550	6550
	77	9	59200	18150	41050	239	82	30.2	21.5	6565	6565
95	62	26	56200	50250	5950	253	81	30.7	21.8	6680	6690
	67	20	56800	39100	17700	254	82	30.8	21.9	6710	6715
	72	14	57250	28000	29250	254	82	30.9	21.9	6730	6730
	77	9	57600	17700	39900	255	83	31.0	22.0	6745	6750
100	62	25	54550	49600	4950	269	82	31.5	22.3	6860	6860
	67	20	55250	38550	16700	270	83	31.6	22.4	6890	6890
	72	14	55650	27500	28150	270	83	31.7	22.4	6910	6910
	77	9	55950	17250	38700	271	84	31.8	22.5	6930	6920
105	62	25	53000	49000	4000	285	83	32.3	22.8	7035	7030
	67	19	53500	37950	15550	287	84	32.5	22.9	7070	7060
	72	14	53950	26950	27000	287	84	32.5	23.0	7090	7080
	77	9	54250	16800	37450	287	85	32.6	23.0	7110	7105
110	62	25	51300	48350	2950	302	84	33.0	23.4	7210	7195
	67	19	51850	37350	14500	303	85	33.2	23.5	7245	7230
	72	13	52200	26400	25800	303	85	33.3	23.5	7265	7255
	77	8	52500	16350	36150	304	86	33.4	23.6	7285	7270
115	62	24	49500	47700	1800	320	85	33.8	23.9	7385	7360
	67	19	50050	36750	13300	321	86	34.0	24.0	7415	7400
	72	13	50400	25850	24550	321	86	34.1	24.1	7430	7420
	77	8	50700	15850	34850	321	87	34.1	24.1	7450	7440

COOLING PERFORMANCE DATA

PHA60B000(2 or 3)(B or C)
1800 CFM INDOOR AIR @ 80°F D.B. and LISTED W.B
4500 CFM OUTDOOR AIR

OUTDOOR AMBIENT TEMP (DB)	INDOOR WET BULB TEMP (WB)	INDOOR AIR TEMP DROP (ΔT)	UNIT CAPACITY BTUH			PRESSURES		OUTDOOR UNIT POWER			
			TOTAL	SENSIBLE	LATENT	HEAD	SUCTION	1 PH AMPS	3 PH AMPS	1 PH WATTS	3 PH WATTS
60	62	29	71050	57800	13250	157	71	24.4	16.6	5290	5250
	67	23	71900	45900	26000	157	72	24.4	16.6	5305	5260
	72	17	72450	33850	38600	158	73	24.4	16.6	5310	5265
	77	12	73000	22700	50300	158	73	24.4	16.6	5315	5275
65	62	29	69650	57250	12400	169	72	25.0	16.9	5475	5430
	67	23	70500	45350	25150	169	73	25.1	17.0	5490	5450
	72	17	71000	33400	37600	170	74	25.1	17.0	5500	5460
	77	11	71500	22250	49250	170	74	25.1	17.0	5505	5465
70	62	29	68200	56650	11550	182	73	25.7	17.3	5660	5620
	67	23	69050	44800	24250	182	74	25.8	17.4	5675	5635
	72	17	69550	32900	36650	183	74	25.8	17.4	5690	5650
	77	11	70000	21800	48200	183	75	25.9	17.4	5700	5655
75	62	28	66700	56000	10700	196	74	26.5	17.8	5850	5810
	67	22	67550	44250	23300	196	75	26.5	17.8	5860	5825
	72	16	68000	32350	35650	197	75	26.6	17.9	5880	5840
	77	11	68500	21400	47100	197	76	26.7	17.9	5890	5845
80	62	28	65250	55450	9800	209	75	27.3	18.3	6035	6000
	67	22	66050	43700	22350	210	75	27.4	18.3	6060	6010
	72	16	66550	31900	34650	210	76	27.4	18.4	6070	6030
	77	11	67000	20950	46050	211	76	27.5	18.4	6080	6040
85	62	28	63800	54850	8950	224	75	28.1	18.7	6225	6185
	67	22	64550	43150	21400	224	76	28.2	18.8	6245	6205
	72	16	65050	31400	33650	225	77	28.2	18.9	6260	6215
	77	10	65400	20500	44900	226	77	28.3	18.9	6280	6230
90	62	28	62300	54200	8100	239	76	28.9	19.2	6420	6370
	67	22	63050	42550	20500	240	77	29.0	19.3	6440	6395
	72	16	63500	30850	32650	241	78	29.1	19.3	6455	6415
	77	10	63900	20050	43850	241	78	29.1	19.4	6465	6425
95	62	27	60800	53600	7200	255	77	29.8	19.7	6610	6560
	67	21	61500	42000	19500	256	78	29.9	19.8	6635	6590
	72	15	61950	30350	31600	256	79	29.9	19.8	6650	6600
	77	10	62350	19600	42750	257	79	30.0	19.8	6665	6615
100	62	27	59250	53000	6250	272	78	30.6	20.2	6805	6750
	67	21	59950	41400	18550	273	79	30.7	20.2	6835	6780
	72	15	60400	29850	30550	273	79	30.8	20.3	6845	6800
	77	10	60750	19150	41600	274	80	30.8	20.3	6865	6815
105	62	27	57750	52400	5350	289	79	31.4	20.6	7000	6945
	67	21	58450	40900	17550	289	80	31.5	20.7	7025	6975
	72	15	58850	29350	29500	290	80	31.6	20.7	7045	6990
	77	10	59200	18700	40500	290	81	31.7	20.7	7060	7005
110	62	26	56200	51750	4450	306	80	32.2	21.0	7195	7140
	67	20	56850	40300	16550	307	81	32.3	21.1	7225	7175
	72	15	57250	28800	28450	308	81	32.4	21.1	7245	7190
	77	9	57600	18250	39350	308	82	32.5	21.1	7260	7200
115	62	26	54650	51150	3500	325	81	33.0	21.4	7395	7335
	67	20	55300	39750	15550	325	82	33.1	21.5	7420	7365
	72	14	55650	28300	27350	326	82	33.2	21.5	7440	7385
	77	9	56000	17800	38200	326	83	33.3	21.6	7460	7405

HEATING PERFORMANCE DATA

SPHO / PHA24
900 CFM INDOOR AIR @ 70°F
2900 CFM OUTDOOR AIR

OUTDOOR AMBIENT °F	INDOOR AIR TEMP RISE (ΔT)	UNIT CAPACITY BTUH	C.O.P.	PRESSURES		COND UNIT POWER	
				HEAD	SUCTION	AMPS	WATTS
70	38	37300	3.70	285	88	13.2	2955
65	36	35000	3.60	273	82	12.8	2849
60	33	32700	3.49	260	76	12.3	2746
55	31	30100	3.32	250	70	11.9	2657
50	28	27500	3.15	239	64	11.5	2559
45	26	25100	2.97	230	58	11.1	2477
40	24	22700	2.78	223	54	10.7	2393
35	21	20500	2.59	216	49	10.3	2320
30	19	18400	2.40	207	45	9.9	2247
25	17	16300	2.21	198	40	9.5	2162
20	15	14200	2.02	189	36	9.1	2060
15	13	12400	1.83	182	32	8.8	1986
10	12	10800	1.64	177	29	8.5	1930
5	10	9200	1.45	172	26	8.3	1860
0	9	7700	1.26	167	23	8.0	1791
-5	7	6100	1.07	162	20	7.7	1671
-10	6	4500	0.88	157	17	7.5	1499
-15	5	2900	0.69	152	14	7.2	1232

SPHO / PHA30
1100 CFM INDOOR AIR @ 70°F
2900 CFM OUTDOOR AIR

OUTDOOR AMBIENT °F	INDOOR AIR TEMP RISE (ΔT)	UNIT CAPACITY BTUH	C.O.P.	PRESSURES		COND UNIT POWER	
				HEAD	SUCTION	AMPS	WATTS
70	30	36300	3.30	273	69	14.3	3224
65	29	35000	3.25	264	66	13.9	3156
60	28	33600	3.20	254	63	13.6	3077
55	27	32200	3.13	246	61	13.3	3015
50	26	30700	3.07	238	58	13.1	2931
45	24	28900	2.96	227	55	12.7	2862
40	22	26400	2.80	213	49	12.3	2763
35	20	24000	2.58	201	44	11.9	2726
30	18	21600	2.29	191	40	11.5	2764
25	16	19200	2.00	180	36	11.1	2814
20	14	16800	1.71	170	32	10.7	2879
15	12	14900	1.55	162	29	10.3	2817
10	11	13700	1.60	156	25	10.1	2510
5	10	12600	1.65	151	22	9.9	2238
0	9	11400	1.70	146	19	9.7	1965
-5	9	10300	1.75	140	15	9.5	1725
-10	8	9100	1.80	135	12	9.3	1482
-15	7	7900	1.85	129	9	9.1	1252

HEATING PERFORMANCE DATA

SPHO / PHA36

1270 CFM INDOOR AIR @ 70°F

3060 CFM OUTDOOR AIR

OUTDOOR AMBIENT °F	INDOOR AIR TEMP RISE (ΔT)	UNIT CAPACITY BTUH	C.O.P.	PRESSURES		COND UNIT POWER			
				HEAD	SUCTION	AMPS 1PH	AMPS 3PH	WATTS 1PH	WATTS 3PH
70	34	47100	3.78	252	83	16.4	13.1	3652	3652
65	32	43900	3.63	243	77	15.8	12.6	3544	3544
60	29	40700	3.49	234	71	15.3	12.2	3418	3418
55	27	37700	3.32	226	65	14.8	11.9	3328	3328
50	25	34700	3.16	219	59	14.4	11.5	3218	3218
45	23	31500	2.96	212	54	13.9	11.2	3119	3119
40	21	27900	2.72	206	50	13.5	10.8	3006	3006
35	19	24900	2.50	200	45	13.1	10.5	2919	2919
30	17	22600	2.32	194	41	12.7	10.4	2855	2855
25	16	20200	2.14	188	36	12.4	10.2	2766	2766
20	14	17900	1.97	182	32	12.1	10.1	2663	2663
15	12	15500	1.77	176	27	11.7	9.8	2567	2567
10	10	12900	1.53	168	24	11.1	9.4	2471	2471
5	8	10200	1.29	160	20	10.4	9.1	2317	2317
0	6	7600	1.06	152	16	9.8	8.7	2101	2101
-5	4	5000	0.82	144	12	9.2	8.3	1787	1787
-10	3	2400	0.59	137	8	8.6	7.9	1192	1192
-15	1	300	0.35	129	4	8.0	7.5	251	251

SPHO / PHA42

1400 CFM INDOOR AIR @ 70°F

3875 CFM OUTDOOR AIR

OUTDOOR AMBIENT °F	INDOOR AIR TEMP RISE (ΔT)	UNIT CAPACITY BTUH	C.O.P.	PRESSURES		COND UNIT POWER			
				HEAD	SUCTION	AMPS 1PH	AMPS 3PH	WATTS 1PH	WATTS 3PH
70	32	49400	3.34	277	73	19.8	15.8	4335	4335
65	31	47500	3.29	268	70	19.3	15.4	4231	4231
60	30	45500	3.23	259	67	18.8	15.0	4129	4129
55	28	43100	3.15	249	64	18.3	14.6	4010	4010
50	27	40700	3.06	238	60	17.7	14.2	3898	3898
45	25	37800	2.88	228	57	17.2	13.8	3847	3847
40	23	34400	2.56	217	53	16.7	13.4	3938	3938
35	21	31000	2.31	206	49	16.2	13.0	3933	3933
30	19	27700	2.17	195	44	15.7	12.6	3741	3741
25	17	24300	2.02	184	40	15.2	12.2	3526	3526
20	15	20900	1.88	173	35	14.7	11.8	3258	3258
15	13	18900	1.74	166	31	14.4	11.6	3183	3183
10	13	18800	1.61	162	28	14.3	11.5	3422	3422
5	12	18700	1.48	159	25	14.2	11.4	3703	3703
0	11	18700	1.34	155	22	14.1	11.3	4090	4090
-5	10	18600	1.21	152	19	14.0	11.2	4505	4505
-10	10	18500	1.08	149	16	13.9	11.1	5020	5020
-15	9	18400	0.95	145	13	13.8	11.0	5677	5677

HEATING PERFORMANCE DATA

SPHO / PHA48
1700 CFM INDOOR AIR @ 70°F
4500 CFM OUTDOOR AIR

OUTDOOR AMBIENT °F	INDOOR AIR TEMP RISE (ΔT)	UNIT CAPACITY BTUH	C.O.P.	PRESSURES		COND UNIT POWER			
				HEAD	SUCTION	AMPS 1PH	AMPS 3PH	WATTS 1PH	WATTS 3PH
70	36	65800	3.38	280	78	25.8	20.6	5706	5706
65	34	63100	3.32	270	74	25.1	20.1	5570	5570
60	33	60300	3.26	260	70	24.5	19.6	5421	5421
55	31	57500	3.18	250	66	23.9	19.0	5299	5299
50	30	54600	3.10	241	62	23.3	18.4	5162	5162
45	28	50300	2.94	230	57	22.7	17.9	5014	5014
40	25	43800	2.65	219	53	22.1	17.6	4844	4844
35	23	38900	2.43	208	48	20.8	17.3	4692	4692
30	21	36200	2.30	198	44	18.6	16.7	4613	4613
25	19	33600	2.17	187	40	16.4	16.1	4538	4538
20	17	30900	2.04	177	36	14.1	15.5	4439	4439
15	15	27800	1.89	169	31	13.5	15.0	4311	4311
10	14	24000	1.71	162	28	15.2	14.4	4113	4113
5	12	20100	1.53	156	24	17.0	13.9	3850	3850
0	11	16300	1.35	150	20	18.7	13.4	3539	3539
-5	10	12400	1.16	144	16	20.4	12.8	3133	3133
-10	8	8600	0.98	138	12	22.1	12.3	2572	2572
-15	7	4700	0.80	132	8	23.9	11.8	1722	1722

HEATING PERFORMANCE DATA

SPHO60 / PHA60B000xA
1800 CFM INDOOR AIR @ 70°F
4500 CFM OUTDOOR AIR

OUTDOOR AMBIENT °F	INDOOR AIR TEMP RISE (ΔT)	UNIT CAPACITY BTUH	C.O.P.	PRESSURES		COND UNIT POWER			
				HEAD	SUCTION	AMPS 1PH	AMPS 3PH	WATTS 1PH	WATTS 3PH
70	36	71000	3.25	250	66	29.2	23.4	6403	6403
65	35	69000	3.22	244	64	28.8	23.0	6280	6280
60	34	67000	3.20	238	62	28.3	22.6	6136	6136
55	33	64000	3.14	232	59	27.7	22.1	5974	5974
50	31	61000	3.08	225	56	27.1	21.7	5805	5805
45	30	57500	2.96	218	53	26.8	21.4	5693	5693
40	28	54000	2.85	211	50	26.4	21.1	5553	5553
35	25	49000	2.63	200	46	25.3	20.2	5460	5460
30	23	44000	2.40	189	41	24.2	19.4	5373	5373
25	20	39000	2.17	177	37	23.1	18.5	5267	5267
20	17	34000	1.95	166	32	22.0	17.6	5110	5110
15	15	30500	1.83	161	29	21.4	17.1	4885	4885
10	14	27000	1.70	157	26	20.7	16.5	4655	4655
5	12	23500	1.58	152	23	20.0	16.0	4359	4359
0	10	20000	1.45	147	20	19.4	15.5	4043	4043
-5	8	16500	1.33	142	17	18.8	15.0	3636	3636
-10	7	13000	1.20	138	14	18.1	14.4	3175	3175
-15	5	9500	1.08	133	11	17.4	13.9	2578	2578

PHA60B000xC
1800 CFM INDOOR AIR @ 70°F
4500 CFM OUTDOOR AIR

OUTDOOR AMBIENT °F	INDOOR AIR TEMP RISE (ΔT)	UNIT CAPACITY BTUH	C.O.P.	PRESSURES		COND UNIT POWER			
				HEAD	SUCTION	AMPS 1PH	AMPS 3PH	WATTS 1PH	WATTS 3PH
70	33	64900	3.21	241	53	26.7	22.6	5926	5926
65	32	63300	3.16	237	52	26.4	22.1	5871	5871
60	31	61700	3.12	233	50	26.1	21.6	5796	5796
55	31	60700	3.09	144	50	25.9	21.1	5757	5757
50	30	59600	3.07	56	49	25.7	20.5	5690	5690
45	29	56300	2.94	44	47	25.5	20.1	5612	5612
40	25	49700	2.66	147	44	25.1	19.7	5476	5476
35	23	44800	2.48	206	41	24.6	19.3	5294	5294
30	21	42700	2.43	197	37	23.8	18.9	5150	5150
25	20	40700	2.37	188	34	23.0	18.5	5033	5033
20	19	38600	2.32	179	31	22.2	18.1	4876	4876
15	17	35600	2.20	171	27	21.4	17.7	4743	4743
10	15	31100	1.97	165	24	20.7	17.2	4627	4627
5	13	26600	1.74	158	21	19.9	16.7	4480	4480
0	11	22100	1.51	152	18	19.2	16.2	4289	4289
-5	9	17600	1.28	145	15	18.4	15.7	4030	4030
-10	7	13100	1.05	139	11	17.7	15.2	3657	3657
-15	5	8600	0.82	132	8	16.9	14.7	3074	3074

HEATING PERFORMANCE DATA

PERFORMANCE TEST

All data based upon listed indoor dry bulb temperature. .00 inches external static pressure on coil of outdoor section. Indoor air cubic feet per minute (CFM) as listed in the Performance Data Sheets:

If conditions vary from this, results will change as follows:

1. As indoor dry bulb temperatures increase, a slight increase will occur in indoor air temperature drop (DT). Low and high side pressures and power will not change.

2. As indoor CFM decreases, a slight increase will occur in indoor temperature drop (DT). A slight decrease will occur in low and high side pressures and power.

A properly operating unit should be within plus or minus **3 degrees** of the typical (**DT**) value shown.

A properly operating unit should be within plus or minus **7 PSIG** of the **head pressure** shown.

A properly operating unit should be within plus or minus **3 PSIG** of the **suction pressure** shown.

A properly operating unit should be within plus or minus **3 Amps** of the typical value shown.

SCHEDULED MAINTENANCE

The owner should be made aware of the fact, that, as with any mechanical equipment the remote air conditioner requires regularly scheduled maintenance to preserve high performance standards, prolong the service life of the equipment, and lessen the chances of costly failure.

In many instances the owner may be able to perform some of the maintenance, however, the advantage of a service contract, which places all maintenance in the hands of a trained serviceman, should be pointed out to the owner.

⚠ WARNING

DISCONNECT POWER SUPPLY BEFORE SERVICING

ONCE A MONTH

1. Inspect the return filters of the evaporator unit and clean or change if necessary. **NOTE:** Depending on operation conditions, it may be necessary to clean the filters more often. If permanent type filters are used, they should be washed with warm water, dried and sprayed with an adhesive according to manufacturers recommendations.

2. When operating on the cooling cycle, inspect the condensate line piping from the evaporator coil. Make sure the piping is clear for proper condensate flow.

ONCE A YEAR

Qualified Service Personnel Only

1. Clean the indoor and outdoor coils.

2. Clean the casing of the outdoor unit inside and out .

3. Motors are permanently lubricated and under normal conditions do not require oiling. If oil ports are available, you may lightly lubricate (approx. 4 drops) both bearings of the outdoor fan motor and indoor blower motor no more than once per year with SAE 20 or 30 motor oil. TO AVOID PREMATURE MOTOR FAILURE, DO NOT OVER OIL.

3a. Motors are permanently lubricated and under normal conditions do not require oiling. If oiling is required lightly lubricate both bearings of the induced draft blower (Package Gas Units) with three (3) drops to each motor bearing using Anderol 465. TO AVOID PREMATURE MOTOR FAILURE, DO NOT OVER OIL.

4. Manually rotate the outdoor fan and indoor blower to be sure they run freely.

5. Inspect the control panel wiring, compressor connections, and all other component wiring to be sure all connections are tight. Inspect wire insulation to be certain that it is good.

6. Check the contacts of the compressor contactor. If they are burned or pitted, replace the contactor.

7. Using a halide or electronic leak detector, check all piping and etc. for refrigerant leaks.

8. Check the combustion chamber (Heat Exchanger) for soot, scale, etc. Inspect all burners for lint and proper positioning.

9. Start the system, using the proper instrumentation check gas inlet and manifold pressures, burner flame and microamp signal. Adjust if necessary.

10. Start the system and run both a Cooling & Heating Performance Test. If the results of the test are not satisfactory, see the "Service Problem Analysis" Chart of the possible cause.

SERVICING

TEST EQUIPMENT

Proper test equipment for accurate diagnosis is as essential as regular hand tools.

The following is a must for every service technician and service shop:

1. Thermocouple type temperature meter - measure dry bulb temperature.
2. Sling psychrometer- measure relative humidity and wet bulb temperature.
3. Amprobe - measure amperage and voltage.
4. Refrigeration Test Cord - check compressors, motors, and continuity testing.
5 Volt-Ohm Meter - testing continuity, capacitors, and motor windings.
6. Accurate Leak Detector - testing for refrigerant leaks.
7. High Vacuum Pump - evacuation.
8. Electric Vacuum Gauge, Manifold Gauges and high vacuum hoses - to measure and obtain proper vacuum.
9. Accurate Charging Cylinder or Electronic Scale - measure proper refrigerant charge.
10. Inclined Manometer - measure static pressure and pressure drop across coils.

Other recording type instruments can be essential in solving abnormal problems, however, in many instances they may be rented from local sources.

Proper equipment promotes faster, more efficient service, and accurate repairs with less call backs.

COOLING & HEATING PERFORMANCE TEST

Package Cooling and Package Heat Pumps

Before attempting to diagnose an operating fault, run a Cooling and/or Heating Performance Test and apply the results to the Service Problem Analysis Guide.

Package Gas Units

Before attempting to diagnose an operating fault, run a heating performance test and apply the results to the Service Problem Analysis Guide.

To conduct a heating performance test, the BTU input to the furnace must be calculated.

After the heating cycle has been in operation for at least fifteen minutes and with all other gas appliances turned off, the gas meter should be clocked.

To find the BTU input, multiply the number of cubic feet of gas consumed per hour by the heating value of the gas being used. (The calorific value of the gas being used is found by contacting your local utility.)

Example:

It is found by the gas meter, that it takes forty (40) seconds for the hand on the cubic foot dial to make one complete revolution, with all appliances off, except the furnace. Take this information and locate it on the gas rate chart. Observe the forty (40) seconds, locate and read across to the one (1) cubic foot dial column. There we find the number 90, which shows that ninety (90) cubic feet of gas will be consumed in one (1) hour.

Let's assume the local gas utility has stated that the calorific value of the gas is 1025 BTU.

Multiplying the ninety (90) cubic feet by 1025 BTU gives us an input of 92,250 BTUH.

Checking the BTU input on the rating plate of the furnace being tested.

EXAMPLE: PGA30B0902C

INPUT: 90,000 BTU/HR

OUTPUT CAP: 72,000

Should the figure you calculated not fall within five (5) percent of the nameplate rating of the unit, adjust the gas valve pressure regulator or resize orifices. In no case should the input exceed that shown on the rating plate.

⚠ CAUTION

ALWAYS CONNECT A MANOMETER TO THE 1/8" PIPE TAP AT THE GAS VALVE BEFORE ADJUSTING THE PRESSURE REGULATOR. IN NO CASE SHOULD THE FINAL MANIFOLD PRESSURE VARY MORE THAN PLUS OR MINUS .3 INCHES WATER COLUMN FROM 3.5 INCHES WATER COLUMN FOR NATURAL GAS OR 10 INCHES WATER COLUMN FOR PROPANE GAS.

To adjust the pressure regulator on the gas valve, turn down (clockwise) to increase pressure and input, and out (counterclockwise) to decrease pressure and input.

Since normally propane gas is not installed with a gas meter, clocking will be virtually impossible. The gas orifices used with propane are calculated for 2500 BTU gas and with proper inlet pressures and correct piping size, full capacity will be obtained.

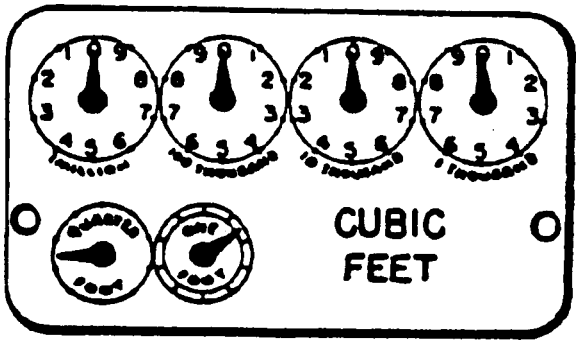
With propane gas, no unit gas valve regulator is used; however, the second stage supply line pressure regulator should be adjusted to give 11" water column with all other gas consuming appliances running.

The dissipation of the heat transferred to the heat exchanger is now controlled by the amount of air circulated over its surface.

The amount (CFM) of air circulated is governed by the external static pressure in inches of water column of duct work, cooling coil, registers and etc., applied externally to the unit versus the motor speed tap.

SERVICING

A properly operating unit must have the BTU input and CFM of air, within the limits shown to prevent short cycling of the equipment. As the external static pressure goes up, the temperature rise will also increase. Consult the proper tables for temperature rise limitation.



GAS RATE -- CUBIC FEET PER HOUR

Seconds for One Revolution	Size of Test Dial 1/4 cu/ft	1/2 cu/ft	1 cu/ft	2 cu/ft	5 cu/ft	Seconds for One Revolution	Size of Test Dial 1/4 cu/ft	1/2 cu/ft	1 cu/ft	2 cu/ft	5 cu/ft
10	90	180	360	720	1800	36	25	50	100	200	500
11	82	164	327	655	1636	37	--	--	97	195	486
12	75	150	300	600	1500	38	23	47	95	189	474
13	69	138	277	555	1385	39	--	--	92	185	462
14	64	129	257	514	1286	40	22	45	90	180	450
15	60	120	240	480	1200	41	--	--	--	176	439
16	56	113	225	450	1125	42	21	43	86	172	429
17	53	106	212	424	1059	43	--	--	--	167	419
18	50	100	200	400	1000	44	--	41	82	164	409
19	47	95	189	379	947	45	20	40	80	160	400
20	45	90	180	360	900	46	--	--	78	157	391
21	43	86	171	343	857	47	19	38	76	153	383
22	41	82	164	327	818	48	--	--	75	150	375
23	39	78	157	313	783	49	--	--	--	147	367
24	37	75	150	300	750	50	18	36	72	144	360
25	36	72	144	288	720	51	--	--	--	141	355
26	34	69	138	277	692	52	--	--	69	138	346
27	33	67	133	265	667	53	17	34	--	136	340
28	32	64	129	257	643	54	--	--	67	133	333
29	31	62	124	248	621	55	--	--	--	131	327
30	30	60	120	240	600	56	16	32	64	129	321
31	--	--	116	232	581	57	--	--	--	126	316
32	28	56	113	225	563	58	--	31	62	124	310
33	--	--	109	218	545	59	--	--	--	122	305
34	26	53	106	212	529	60	15	30	60	120	300
35	--	--	103	206	514						

SERVICING

COOLING OR HEAT PUMP - SERVICE ANALYSIS GUIDE

Complaint	No Cooling / Heating							Unsatisfactory Clg / Htg								System Operating Pressures				Test Method Remedy	See Service Procedure Ref.
POSSIBLE CAUSE **DOTS IN ANALYSIS GUIDE INDICATE "POSSIBLE CAUSE"** **SYMPTOM**	System will not start	Compressor will not start - fan runs	Comp. and Cond. Fan will not start	Evaporator fan will not start	Condenser fan will not start	Compressor runs - goes off on overload	Compressor cycles on overload	System runs continuously - little clg / htg	Too cool and then too warm	Not cool enough on warm days	Certain areas to cool others to warm	Compressor is noisy	System run blows cold air (Heating)	Unit will not terminate defrost	Unit will not defrost	Low suction pressure	Low head pressure	High suction pressure	High head pressure		
Power Failure	●																			Test Voltage	S-1
Blown Fuse	●		●	●																Imspect Fuse Size & Type	S-4
Loose Connection	●			●		●														Inspect Connection - Tighten	S-2
Shorted or Broken Wires	●	●	●	●	●	●														Test Circuits With Ohmmeter	S-3
Open Overload		●		●	●								♦							Test Continuity of Overload	S-17A
Faulty Thermostat	●			●					●											Test continuity of Thermostat & Wiring	S-3
Faulty Transformer	●		●																	Check control circuit with voltmeter	S-4
Shorted or Open Capacitor		●			●	●														Test Capacitor	S-15
Shorted or Grounded Compressor		●				●														Test Motor Windings	S-17B
Compressor Stuck	●					●														Use Test Cord	S-17C
Faulty Compressor Contactor	●	●			●	●														Test continuity of Coil & Contacts	S-7, S-8
Faulty Fan Relay				●																Test continuity of Coil And Contacts	S-7
Open Control Circuit				●																Test Control Circuit with Voltmeter	S-4
Low Voltage		●				●	●													Test Voltage	S-1
Faulty Evap. Fan Motor				●												●				Repair or Replace	S-16
Shorted or Grounded Fan Motor					●														●	Test Motor Windings	S-16
Improper Cooling Anticipator							●		●											Check resistance of Anticipator	S-3
Shortage or Refrigerant							●	●								●	●			Test For Leaks, Add Refrigerant	S-103
Restricted Liquid Line							●	●								●	●			Replace Restricted Part	S-112
Dirty Air Filter								●		●	●					●			♦	Inspect Filter-Clean or Replace	
Dirty Indoor Coil								●		●	●					●			♦	Inspect Coil - Clean	
Not enough air across Indoor Coil								●		●	●					●			♦	Speed Blower, Check Duct Static Press	S-200
Too much air across Indoor Coil																		●		Reduce Blower Speed	S-200
Overcharge of Refrigerant						●	●					●						●	●	Release Part of Charge	S-113
Dirty Outdoor Coil						●	●			●						♦			●	Inspect Coil - Clean	
Noncondensibles							●			●									●	Remove Charge, Evacuate, Recharge	S-114
Recirculation of Condensing Air							●			●									●	Remove Obstruction to Air Flow	
Infiltration of Outdoor Air								●		●	●									Check Windows, Doors, Vent Fans, Etc.	
Improperly Located Thermostat						●			●											Relocate Thermostat	
Air Flow Unbalanced									●		●									Readjust Air Volume Dampers	
System Undersized								●		●										Refigure Cooling Load	
Broken Internal Parts												●								Replace Compressor	
Inefficient Compressor								●					♦				●	●		Test Compressor Efficiency	S-104
High Pressure Control Open			●																	Reset And Test Control	S-12
Unbalanced Power, 3PH		●				●	●													Test Voltage	
Wrong Type Expansion Valve						●	●			●										Replace Valve	
Expansion Device Restricted						●	●	●		●						●	●			Replace Valve	
Expansion Valve Bulb Loose												●						●		Tighten Bulb Bracket	
Inoperative Expansion Valve						●		●								●				Check Valve Operation	S-110
Loose Hold-down Bolts												●								Tighten Bolts	
Faulty Reversing Relay			♦										♦							Test continuity of Coil And Contacts	S-7
Faulty Defrost Relay														♦	♦					Test continuity of Coil And Contacts	S-7
Faulty Reversing Valve						●							♦	♦	♦		●	●		Test Valve Operation	S-21
Leaking Check Valve/Orifice								●									●	●		Replace Check Valve	
Faulty Defrost Timer														♦	♦					Test Timer Operation	S-23/24
Faulty 30/60 Control															♦					Test Control	S-25
Additional Opt Elect. Heat Req.								♦												Run Load Calculation, Add Heaters	
Open fuse or limit in Elect. Htr								♦												Inspect Fuses and Limits	S-50
O.D. Thermostat setting to Low								♦												Raise Setting	

● Clg or Htg Cycle ♦ Heat Pump Cycle only

SERVICING

GAS HEATING - SERVICE ANALYSIS GUIDE

Complaint	No Heat			Unsatisfactory Heat							
POSSIBLE CAUSE **DOTS IN ANALYSIS GUIDE INDICATE "POSSIBLE CAUSE"** **SYMPTOM**	System Will Not Start	Burner Won't Ignite	Burner Ignites-Locks Out	Burner Shuts Off prior to T'Stat being Satasfied	Short Cycles	Long Cycles	Soot and /or Fumes	To Much Heat	Not Enough Heat	**Test Method Remedy**	**See Service Procedure Reference**
Power Failure	●									Test Voltage	S-1
Blown Fuse	●									Test Voltage	S-4
Loose Connection	●									Check Wiring	S-2
Shorted or Broken Wires	●									Check Wiring	S-3
No Low Voltage	●									Check Transformer	S-4
Faulty Thermostat	●				●	●		●		Check Thermostat	S-3
Faulty Transformer	●									Check Transformer	S-4
Poor or High Resistance Ground			●							Measure Ground Resistance	S-313
Improper Heat Anticipator Setting					●	●		●	●	Adjust Heat Anticipator Setting	S-3
Improper Thermostat Location					●	●		●	●	Relocate Thermostat	
Faulty Limit or Roll Out Switch		●		●						Test Control	S-300-302
Faulty Flame Sensor			●							Test Flame Sensor	S-314
Faulty Ignition Control		●	●							Test Control	S-313
Gas Valve or Gas Supply Shut Off		●								Turn Valves to On Position	S-304
Faulty Induced Draft Blower		●					●			Test Blower	S-309
Broken or Shorted Ignitor		●								Test Ignitor	S-312
Faulty Combustion Relay		●		●						Test Relay	S-20
Dirty Flame Sensor, Low uA			●							Clean Flame Sensor	S-314
Flame Sensor not in Flame, Low uA			●							Test/Adjust Position of Flame Sensor	S-314
Faulty Gas Valve		●					●		●	Replace Gas Valve	S-304
Open Auxillary Limit		●		●						Reset Control	S-301
Improper Air Flow or Distribution				●					●	Check Duct Static	
Cycling on Limit				●	●				●	Check Controls & Temperature Rise	S-300
Delayed Ignition							●			Test for Delayed Ignition	S-308
Flashback							●			Test for Flashback	S-309
Orifice Size							●	●	●	Check Orifices	S-306
Gas Pressure		●					●	●	●	Check Gas Pressure	S-307
Cracked Heat Exchanger							●			Check Burner Flames	S-302
Stuck Gas Valve		●					●	●		Replace Gas Valve	S-304
Furnace Undersized									●	Replace with Proper Size Furnce	
Faulty Pressure Switch		●	●	●						Test Pressure Switch	S-310
Blocked or Restricted Flue							●			Check Flue/Drawdown Pressure	S-310
Open Roll Out Switch		●	●							Test Control	S-302
Collector Box "J" Tube Position		●	●							Test Negative Pressure	S-310
Bouncing On Pressure Switch			●							Test Negative Pressure	S-310

SERVICING

S-1 CHECKING VOLTAGE

WARNING

Disconnect Electrical Power Supply:

1. Remove doors, control panel cover, etc. from unit being tested.

With power ON:

WARNING

LINE VOLTAGE NOW PRESENT

2. Using a voltmeter, measure the voltage across terminals L1 and L2 of the contactor for single phase units, and L3, for 3 phase units.
3. No reading - indicates open wiring, open fuse(s) no power or etc. from unit to fused disconnect service. Repair as needed.
4. With ample voltage at line voltage connectors, energize the unit.
5. Measure the voltage with the unit starting and operating, and determine the unit Locked Rotor Voltage. NOTE: If checking heaters, be sure all heating elements are energized.

   Locked Rotor Voltage is the actual voltage available at the compressor during starting, locked rotor, or a stalled condition. Measured voltage should be above minimum listed in chart below.

   To measure Locked Rotor Voltage attach a voltmeter to the run "R" and common "C" terminals of the compressor, or to the T_1 and T_2 terminals of the contactor. Start the unit and allow the compressor to run for several seconds, then shut down the unit. Immediately attempt to restart the unit while measuring the Locked Rotor Voltage.
6. Should read within the voltage tabulation as shown. If the voltage falls below the minimum voltage, check the line wire size. Long runs of undersized wire can cause low voltage. If wire size is adequate, notify the local power company in regards to either low or high voltage.

UNIT SUPPLY VOLTAGE		
VOLTAGE	MIN.	MAX.
460	437	506
208/230	198	253

NOTE: When operating electric heaters on voltages other than 240 volts refer to the System Operation section on electric heaters to calculate temperature rise and air flow. Low voltage may cause insufficient heating.

Three phase units require a balanced 3 phase power supply to operate. If the percentage of voltage imbalance exceeds 3% the unit must not be operated until the voltage condition is corrected.

$$\text{\% Voltage Imbalance} = \frac{\text{Max. Voltage Deviation From Average Voltage}}{\text{Average Voltage}} \times 100$$

To find the percentage of imbalance, measure the incoming power supply.

L1 - L2 = 240V
L1 - L3 = 232V
L2 - L3 = 238V
Total 710V

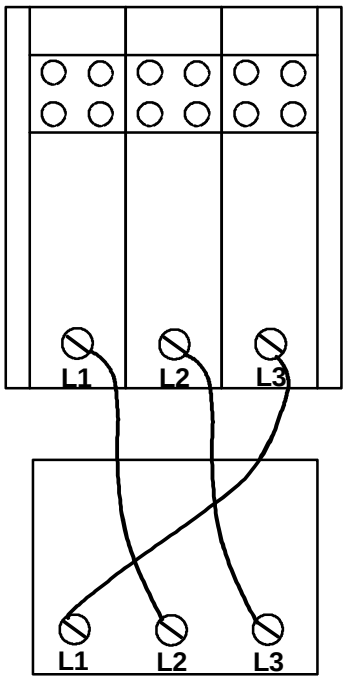
Avg. V = 710 / 3 = **236.7**

To find Max. deviation:
240 - 236.7 = +3.3
232 - 236.7 = **-4.7**
238 - 236.7 = +1.3

Max deviation was 4.7V

% Voltage Imbalance = 4.7 / 236.7 = **1.99%**

If the percentage of imbalance had exceeded 3%, it must be determined if the imbalance is in the incoming power supply or the equipment. To do this rotate the legs of the incoming power and retest voltage as shown below.



L1 - L2 = 240V
L1 - L3 = 227V
L2 - L3 = 238V

Rotate all 3 incoming legs as shown.

L1 - L2 = 227V
L1 - L3 = 238V
L2 - L3 = 240V

By the voltage readings we see that the imbalance rotated or traveled with the switching of the incoming legs. Therefore the power lies within the incoming power supply.

If the imbalance had not changed then the problem would lie within the equipment. Check for current leakage, shorted motors, etc.

SERVICING

S-2 CHECKING WIRING

WARNING

Disconnect Electrical Power Supply:

1. Check wiring visually for signs of overheating, damaged insulation and loose connections.
2. Use an ohmmeter to check continuity of any suspected open wires.
3. If any wires must be replaced, replace with comparable gauge and insulation thickness.

S-3 CHECKING THERMOSTAT, WIRING, AND ANTICIPATOR

S-3A Thermostat and Wiring

WARNING

LINE VOLTAGE NOW PRESENT

With power ON, thermostat calling for cooling

1. Use a voltmeter to check for 24 volts at thermostat wires C and Y in the condensing unit control panel.
2. No voltage indicates trouble in the thermostat, wiring or external transformer source.
3. Check the continuity of the thermostat and wiring. Repair or replace as necessary.

Indoor Blower Motor

With power ON:

WARNING

LINE VOLTAGE NOW PRESENT

1. Set fan selector switch at thermostat to "ON" position.
2. With voltmeter, check for 24 volts at wires C and G.
3. No voltage, indicates the trouble is in the thermostat or wiring.
4. Check the continuity of the thermostat and wiring. Repair or replace as necessary.

Resistance Heaters

1. Set room thermostat to a higher setting than room temperature so both stages call for heat.
2. With voltmeter, check for 24 volts at each heater relay.
3. No voltage, indicates the trouble is in the thermostat or wiring.
4. Check the continuity of the thermostat and wiring. Repair or replace as necessary.

NOTE: Consideration must be given as to how the heaters are wired (O.D.T. and etc.). Also safety devices must be checked for continuity.

S-3B Cooling Anticipator

The cooling anticipator is a small heater (resistor) in the thermostat. During the "off" cycle it heats the bi-metal element helping the thermostat call for the next cooling cycle. This prevents the room temperature from rising too high before the system is restarted. A properly sized anticipator should maintain room temperature within 1 1/2 to 2 degree range.

The anticipator is supplied in the thermostat and is not to be replaced. If the anticipator should fail for any reason, the thermostat must be changed.

S-3C Heating Anticipator

The heating anticipator is a wire-wound adjustable heater, which is energized during the "ON" cycle to help prevent overheating of the conditioned space.

The anticipator is a part of the thermostat and if it should fail for any reason, the thermostat must be replaced. See the following tables for recommended heater anticipator setting in accordance to the number of electric heaters installed.

The first stage heat anticipator setting for heat pump models is .40. The heat anticipator setting for the package gas models is .80.

PHK HEATER KITS

NO. OF HEATERS	0	1	2	3	4	5	6
HEATER KW	0	4.8	9.6	15	20	25	30
FIRST STAGE	.40	.40	.40	.40	.40	.40	.40
SECOND STAGE		.17	.17	.34	.34	.51	.51

S-4 CHECKING TRANSFORMER AND CONTROL CIRCUIT

A step-down transformer (208/240 volt primary to 24 volt secondary) is provided with each indoor unit. This allows ample capacity for use with resistance heaters. The outdoor sections do not contain a transformer.

WARNING

Disconnect Electrical Power Supply:

1. Remove control panel cover or etc. to gain access to transformer.

SERVICING

With power ON:

WARNING

LINE VOLTAGE NOW PRESENT

2. Using a voltmeter, check voltage across secondary voltage side of transformer (R to C).
3. No voltage indicates faulty transformer, bad wiring, or bad splices.
4. Check transformer primary voltage at incoming line voltage connections and/or splices.
5 If line voltage available at primary voltage side of transformer and wiring and splices good, transformer is inoperative. Replace.

S-5 CHECKING CYCLE PROTECTOR

Some models feature a solid state, delay on make after break time delay relay installed in the low voltage circuit. This control is used to prevent short cycling of the compressor under certain operating conditions.

The component is normally closed (R_1 to Y_1). A power interruption will break circuit (R_1 to Y_1) for approximately three minutes before resetting.

WARNING

Disconnect Electrical Power Supply:

1. Remove wire from Y_1 terminal.

2. Wait for approximately four (4) minutes if machine was running.

With power ON:

WARNING

LINE VOLTAGE NOW PRESENT

1. Apply 24 VAC to terminals R_1 and R_2.
2. Should read 24 VAC at terminals Y_1 and Y_2.
3. Remove 24 VAC at terminals R_1 and R_2.
4. Should read 0 VAC at Y_1 and Y_2.
5. Reapply 24 VAC to R1 and R2 - within approximately three (3) to four (4) minutes should read 24 VAC at Y_1 and Y_2.

If not as above - replace relay.

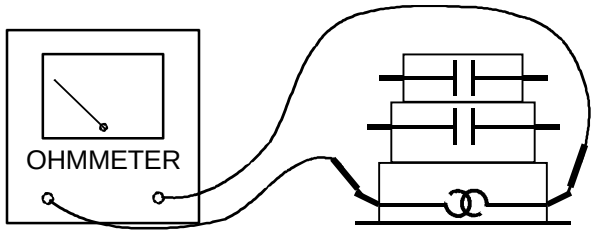
S-6 CHECKING TIME DELAY RELAY

Time delay relays are used in Amana Package Units to improve efficiency by delaying the blower off time. Time delays are also used in electric heaters to sequence in multiple electric heaters.

WARNING

Disconnect Electrical Power Supply:

1. Tag and disconnect all wires from male spade connections of relay.
2. Using an ohmmeter, measure the resistance across terminals H1 and H2. Should read approximately 150 ohms.
3. Using an ohmmeter, check for continuity across terminals 3 and 1, and 4 and 5.
4. Apply 24 volts to terminals H1 and H2. Check for continuity across other terminals - should test continuous. If not as above - replace.



TESTING COIL CIRCUIT

NOTE: The time delay for the contacts to make will be approximately 20 to 50 seconds and to open after the coil is de-energized is approximately 40 to 90 seconds.

S-7 CHECKING CONTACTOR AND/OR RELAYS

The compressor contactor and other relay holding coils are wired into the low or line voltage circuits. When the control circuit is energized the coil pulls in the normally open contacts or opens the normally closed contacts. When the coil is de-energized, springs return the contacts to their normal position.

SERVICING

WARNING

Disconnect Electrical Power Supply:

1. Remove the leads from the holding coil.
2. Using an ohmmeter, test across the coil terminals.

If the coil does not test continuous, replace the relay or contactor.

S-8 CHECKING CONTACTOR CONTACTS

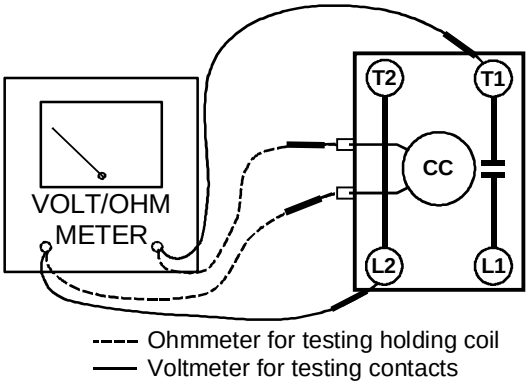
WARNING

Disconnect Electrical Power Supply:

1. Disconnect the wire leads from the terminal (T) side of the contactor.
2. With power ON, energize the contactor.

WARNING

LINE VOLTAGE NOW PRESENT



TESTING COMPRESSOR CONTACTOR

3. Using a voltmeter, test across terminals.
   A. L2 - T1 - No voltage indicates CC1 contacts open.

If a no voltage reading is obtained - replace the contactor.

S-9 CHECKING FAN RELAY CONTACTS

WARNING

Disconnect Electrical Power Supply:

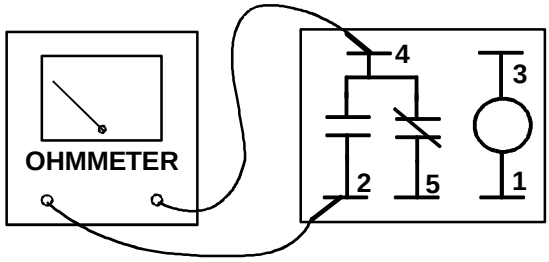
NOTE: Some variation over time has occured in the fan relays used. Refer to the unit wiring diagram for terminal identification.

1. Disconnect wires leads from terminals 2, and 4, & 5 of the Fan Relay .
2. Using an ohmmeter, test between 2 and 4 - should read open. Test between 5 and 4 - should read continuous.
3. With power ON, energize the relay.

WARNING

LINE VOLTAGE NOW PRESENT.

4. Using an ohmmeter, test between 2 and 4 - should read continuous . Test between 5 and 4 - should read open.
5. If not as above, replace the relay.

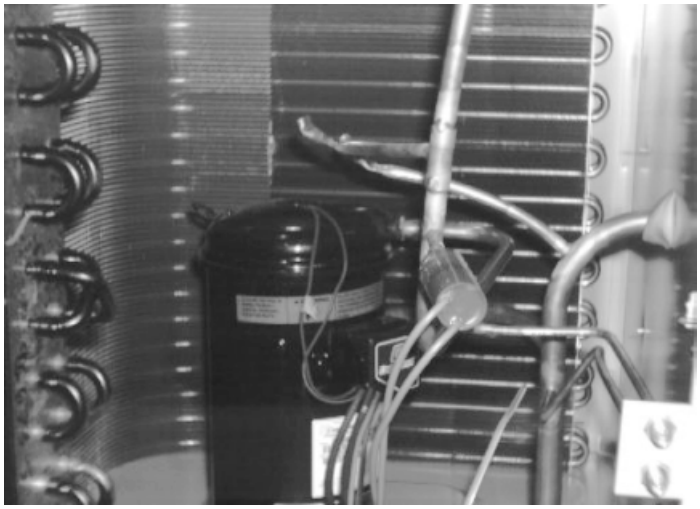


TESTING FAN RELAY

S-12 CHECKING HIGH PRESSURE CONTROL

(PCB and PGB models)

An automatic reset high pressure control senses the pressure in the compressor discharge line. If abnormally high condensing pressures develop, the contacts of the control open, breaking the control circuit before the compressor motor overloads. This control is manually reset.



WARNING

Disconnect Electrical Power Supply:

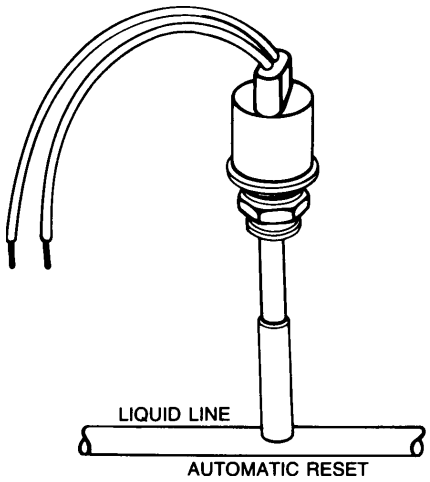
1. Using an ohmmeter, check across terminals of high pressure control, with wire removed. If not continuous, the contacts are open.
2. Reset high pressure control.
3. Attach a gauge to the dill valve port on the base valve.

With power ON:

⚠ WARNING

LINE VOLTAGE NOW PRESENT.

4. Start the system and place a piece of cardboard in front of the condenser coil, raising the condensing pressure.
5. Check pressure at which the high pressure control cuts-out.



If it cuts-out at 400 PSIG ± 10 PSIG, it is operating normally (See causes for high head pressure in Service Problem Analysis Guide). If it cuts out below this pressure range, replace the control. Cut-in is approx. 300 PSIG.

High pressure can result from:

- inoperative condenser fan motor
- restricted or dirty condenser coil
- recirculation of hot condenser air
- refrigerant system restriction
- overcharge of refrigerant

S-13 CHECKING LOW PRESSURE CONTROL

(Early PCB and PGB models)

The low pressure control senses the pressure in the suction line and will open its contacts on a drop in pressure. The low pressure control will automatically reset itself with a rise in pressure.

The package unit low pressure control is designed to cut-out (open) at approximately 30 PSIG. It will automatically cut-in (close) at approximately 80 PSIG.

Test for continuity using a VOM and if not as above, replace the control.

Low pressure can result from:

- dirty filters
- undersized ductwork (excessive ext. static pressure)
- blower speed to low
- indoor blower or capacitor failure
- loss of refrigerant charge
- low ambient cooling operation

NOTE: Amana Package Units are not designed to provide mechanical cooling at outdoor temperatures below 50°F. If cooling is required an economizer may be used with vertical ductwork.

S-14 CHECKING SCROLL COMPRESSOR DISCHARGE THERMOSTAT

Phase 1 scroll compressors are equipped with an internal thermostat located beneath the top cap on the compressor.

This thermostat is designed to sense dangerous discharge temperatures reached under some extreme operating conditions (such as loss of charge or extremely high compression ratio).

Is maximum safe operating temperatures are exceeded the thermostat will open removing power to the compressor. Once the discharge temperature has cooled the thermostat will close and normal operation will resume.

⚠ WARNING

Disconnect Electrical Power Supply:

1. Check for continuity across the terminals of the compressor thermostat. If continuity is not read the thermostat contacts are open.
2. If the contacts read open, allow the thermostat to cool to 140°F. and retest. If the thermostat continues to read open it should be replaced.

NOTE: This protective device should never be by-passed for any purpose.

The approximate thermostat cut-out/cut-in temperatures are 290/140°F.

S-15 CHECKING CAPACITOR

CAPACITOR, RUN

A run capacitor is wired across the auxiliary and main windings of a single phase permanent split capacitor motor. The capacitors primary function is to reduce the line current while greatly improving the torque characteristics of a motor. This is accomplished by using the 90° phase relationship between the capacitor current and voltage in conjunction with the motor windings so that the motor will give two phase operation when connected to a single phase circuit. The capacitor also reduces the line current to the motor by improving the power factor.

The line side of this capacitor is marked with a red dot and is wired to the line side of the circuit.

CAPACITOR, START

SCROLL COMPRESSOR MODELS

Hard start components are not required on Scroll compressor equipped units due to a non-replaceable check valve located in the discharge line of the compressor. However hard start kits are available and may improve low voltage starting charteristics.

This check valve closes off high side pressure to the compressor after shut down allowing equalization through the scroll flanks. Equalization requires only about one or two seconds during which time the compressor may turn backwards.

To prevent the compressor from starting and running backwards a Time Delay Relay (Cycle Protector) has been added to the low voltage circuit.

ALL OTHER MODELS

A start capacitor is wired in parallel with the run capacitor to increase the starting torque. The start capacitor is of the electrolytic type, rather than metallized polypropylene as used in the run capacitor.

A switching device must be wired in series with the capacitor to remove it from the electrical circuit after the compressor starts to run. Not removing the start capacitor will overheat the capacitor and burn out the compressor windings.

These capacitors have a 15,000 ohm, 2 watt resistor wired across its terminals. The object of the resistor is to discharge the capacitor under certain operating conditions, rather than having it discharge across the closing of the contacts within the switching device such as the Start Relay, and to reduce the chance of shock to the servicer. See the Servicing Section for specific information concerning capacitors.

RELAY, START

A potential or voltage type relay is used to take the start capacitor out of the circuit once the motor comes up to speed. This type of relay is position sensitive. The normally closed contacts are wired in series with the start capacitor and the relay holding coil is wired parallel with the start winding. As the motor starts and comes up to speed, the increase in voltage across the start winding will energize the start relay holding coil and open the contacts to the start capacitor.

Two quick ways to test a capacitor are a resistance and a capacitance check.

S-15A Resistance Check

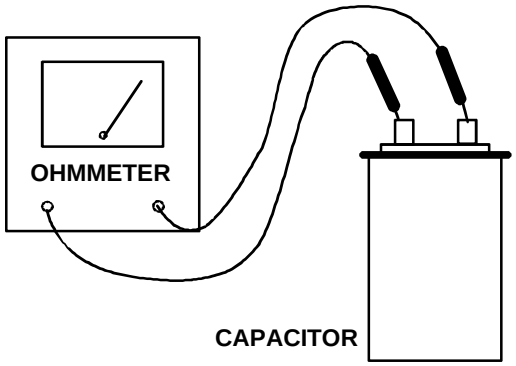
⚠ WARNING

Disconnect Electrical Power Supply:

1. Discharge capacitor and remove wire leads.

⚠ WARNING

DISCHARGE CAPACITOR THROUGH A 20 TO 30 OHM RESISTER BEFORE HANDLING.



TESTING CAPACITOR RESISTANCE

2. Set an ohmmeter on its highest ohm scale and connect the leads to the capacitor -

   A. Good Condition - indicator swings to zero and slowly returns to infinity. (Start capacitor will bleed resistor will not return to infinity. It will still read the resistance of the resistor).

   B. Shorted - indicator swings to zero and stops there - replace.

   C. Open - no reading - replace. (Start capacitor would read resistor resistance).

S-15B Capacitance Check

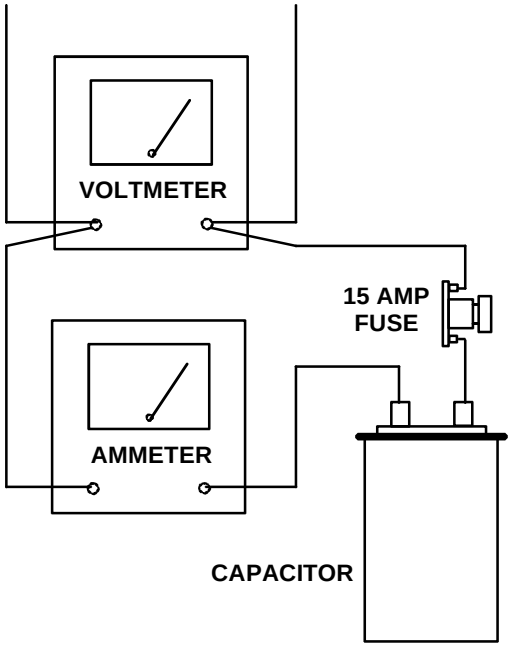
Using a hook-up as shown below, take the amperage and voltage readings and use them in the formula:

SERVICING

WARNING

DISCHARGE CAPACITOR THROUGH A 20 TO 30 OHM RESISTOR BEFORE HANDLING.

Capacitance (MFD) = $\frac{2650 \times \text{Amperage}}{\text{Voltage}}$



TESTING CAPACITANCE

S-16 CHECKING FAN AND BLOWER MOTOR

An auto reset fan motor overload is designed to protect the motor against high temperature and high amperage conditions similar to the compressor internal overload. It also breaks the common circuit within the motor shell; however, heat generated within the motor is faster to dissipate than the compressor, allow at least 45 minutes for the overload to rest, then retest.

WARNING

Disconnect Electrical Power Supply:

1. Remove the motor leads from its respective connection points and capacitor (if applicable).
2. Check the continuity between each of the motor leads.
3. Touch one probe of the ohmmeter to the motor frame (ground) and the other probe in turn to each lead.

If the windings do not test continuous or a reading is obtained from lead to ground, replace the motor.

S-16A ECM MOTOR TAP BOARD

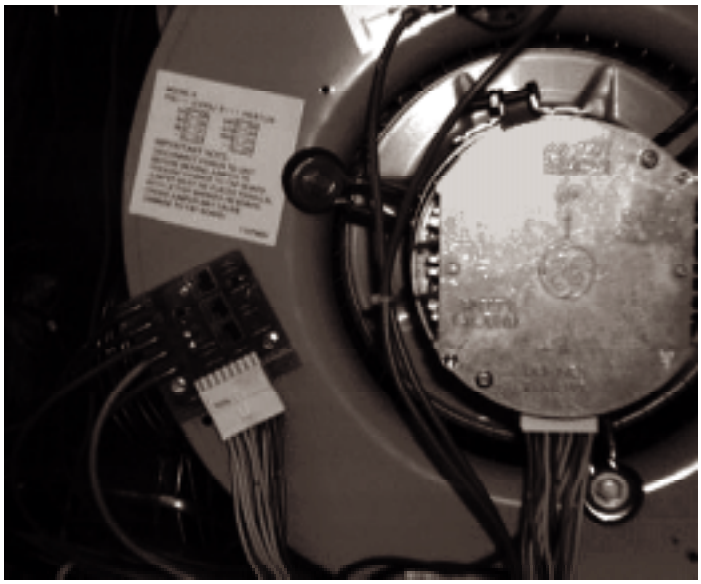
PGC model package units use an ECM blower motor. These motors use an electronic control module attached to the motors end bell to control motor operation. Some unique features of the ECM motor are:

1. Constant Airflow. These motors will maintain constant airflow in excess of .80 static. In other words, as the static increases so does the motors RPM so that a constant CFM is maintained.

NOTE: The motor in these units will move more air under higher static conditions than a simlar sized unit using a PSC motor. Because this motor does not load up and reduce airflow like a PSC motor, in some undersized duct installations this may cause noise or high airflow complants.

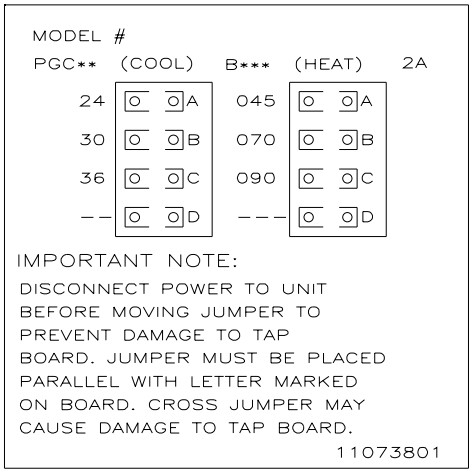
2. Ramp-up/Ramp-down feature. These motors ramp up and down at the beginning or end of a cycle to reduce air rush noise.
3. High voltage is present at these motors all the time. Motor operation is controlled through the low voltage tap board.

A tap board, mounted on the blower housing as shown below is used to control blower operation in 3 modes of operation. Fan only, cooling speed, and heating speed. Refer to the airflow table in the *Blower Performance* section for details.



The cooling and heating speeds are adjusted by relocating the jumper blocks on the tap board. The illustration below shows the label, afixed to the blower housing, for selecting blower speeds.

SERVICING



Two ECM motors are used on the PGC line. One motor is used with the PGC24, 30, and 36, and a second motor is used with the PGC42 and 48 models.

S-17 CHECKING COMPRESSOR WINDINGS

WARNING

HERMETIC COMPRESSOR ELECTRICAL TERMINAL VENTING CAN BE DANGEROUS. WHEN INSULATING MATERIAL WHICH SUPPORTS A HERMETIC COMPRESSOR ELECTRICAL TERMINAL SUDDENLY DISINTEGRATES DUE TO PHYSICAL ABUSE OR AS A RESULT OF AN ELECTRICAL SHORT BETWEEN THE TERMINAL AND THE COMPRESSOR HOUSING, THE TERMINAL MAY BE EXPELLED, VENTING THE VAPOROUS AND LIQUID CONTENTS OF THE COMPRESSOR HOUSING AND SYSTEM.

If the compressor terminal PROTECTIVE COVER and gasket (if required) is not properly in place and secured, there is a remote possibility if a terminal vents, that the vaporous and liquid discharge can be ignited, spouting flames several feet, causing potentially severe or fatal injury to anyone in its path.

This discharge can be ignited external to the compressor if the terminal cover is not properly in place and if the discharge impinges on a sufficient heat source.

Ignition of the discharge can also occur at the venting terminal or inside the compressor, if there is sufficient contaminant air present in the system and an electrical arc occurs as the terminal vents.

Ignition cannot occur at the venting terminal without the presence of contaminant air, and cannot occur externally from the venting terminal without the presence of an external ignition source.

Therefore, proper evacuation of a hermetic system is essential at the time of manufacture and during servicing.

To reduce the possibility of external ignition, all open flame, electrical power, and other heat sources should be extinguished or turned off prior to servicing a system.

If the following test indicates shorted, grounded or open windings, see procedures S-19 for the next steps to be taken.

S-17A Resistance Test

Each compressor is equipped with an internal overload.

The line break internal overload senses both motor amperage and winding temperature. High motor temperature or amperage heats the disc causing it to open, breaking the common circuit within the compressor on single phase units. The three phase internal overload will open all three legs.

Heat generated within the compressor shell, usually due to recycling of the motor, high amperage or insufficient gas to cool the motor, is slow to dissipate, allow at least three to four hours for it to cool and reset, then retest.

Fuse, circuit breaker, ground fault protective device, etc. has not tripped -

WARNING

Disconnect Electrical Power Supply:

1. Remove the leads from the compressor terminals.

WARNING

SEE WARNING S-17 PAGE 90 BEFORE REMOVING COMPRESSOR TERMINAL COVER.

2. Using an ohmmeter, test continuity between terminals S-R, C-R, and C-S, on single phase units or terminals T2, T2 and T3, on 3 phase units.

If either winding does not test continuous, replace the compressor.

NOTE: If an open compressor is indicated allow ample time for the internal overload to reset before replacing compressor.

S-17B Ground Test

If fuse, circuit breaker, ground fault protective device, etc., has tripped, this is a strong indication that an electrical problem exists and must be found and corrected. The circuit protective device rating must be checked and its maximum rating should coincide with that marked on the equipment nameplate.

With the terminal protective cover in place, it is acceptable to replace the fuse or reset the circuit breaker ONE TIME ONLY to see if it was just a nuisance opening. If it opens again, DO NOT continue to reset.

SERVICING

Disconnect all power to unit, making sure that all power legs are open.

1. DO NOT remove protective terminal cover. Disconnect the three leads going to the compressor terminals at the nearest point to the compressor.
2. Identify the leads and using a Megger, Hi-Potential Ground Tester, or other suitable instrument which puts out a voltage between 300 and 1500 volts, check for a ground separately between each of the three leads and ground (such as an unpainted tube on the compressor). Do not use a low voltage output instrument such as a volt-ohmmeter.
3. If a ground is indicated, then carefully remove the compressor terminal protective cover and inspect for loose leads or insulation breaks in the lead wires.
4. If no visual problems indicated, carefully remove the leads at the compressor terminals.

   Carefully retest for ground, directly between compressor terminals and ground.
5. If ground is indicated, replace the compressor.

S-17C Operation Test

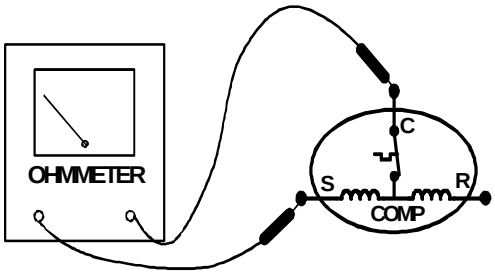
If the voltage, capacitor, overload and motor winding test fail to show the cause for failure:

⚠ WARNING

Disconnect Electrical Power Supply:

1. Remove unit wiring from disconnect switch and wire a test cord to the disconnect switch.

NOTE: The wire size of the test cord must equal the line wire size and the fuse must be of the proper size and type.

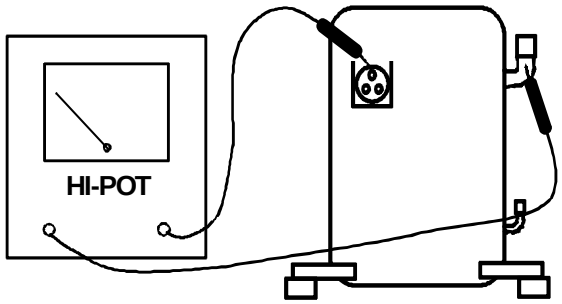


TESTING COMPRESSOR WINDINGS

2. With the protective terminal cover in place, use the three leads to the compressor terminals that were disconnected at the nearest point to the compressor and connect the common, start and run clips to the respective leads.

⚠ WARNING

DAMAGE CAN OCCUR TO THE GLASS EMBEDDED TERMINALS AS AT THIS POINT IF THE LEADS ARE NOT PROPERLY REMOVED, WHICH CAN RESULT IN THE TERMINAL VENTING AND HOT OIL DISCHARGING.



COMPRESSOR GROUND TEST

3. Connect good capacitors of the right MFD and voltage rating into the circuit as shown.
4. With power ON, close the switch.

⚠ WARNING

LINE VOLTAGE NOW PRESENT

A. If the compressor starts and continues to run, the cause for failure is somewhere else in the system.

B. If the compressor fails to start - replace.

Compressor Serial Number Identification

COPELAND COMPRESSOR

E	:	93	J	123456
Motor	Shift	Year	Month	Serial No

TECUMSEH COMPRESSOR

T:	G	22	93C	123456
Month	Day	Year		Serial No

BRISTOL COMPRESSOR

291	93	123456
Day of Year	Year	Serial No

SERVICING

S-18 TESTING CRANKCASE HEATER

The crankcase heater must be energized a minimum of four (4) hours before the condensing unit is operated.

Crankcase heaters are used to prevent migration or accumulation of refrigerant in the compressor crankcase during the off cycles and prevents liquid slugging or oil pumping on start up.

A crankcase heater will not prevent compressor damage due to a floodback or over charge condition.

WARNING

Disconnect Electrical Power Supply:

1. Disconnect the heater lead in wires.
2. Using an ohmmeter, check heater continuity - should test continuous, if not, replace.

NOTE: The positive temperature coefficient crankcase heater is a 40 watt 265 voltage heater. The cool resistance of the heater will be approximately 1800 ohms. The resistance will become greater as the temperature of the compressor shell increases.

S-19 CHECKING REVERSING RELAY CONTACTS

WARNING

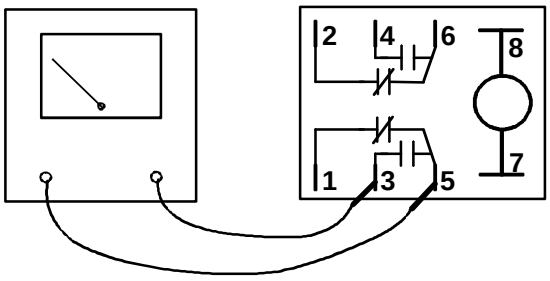
Disconnect Electrical Power Supply:

1. Disconnect the wire leads from terminals 3, 5, 4, and 6.
2. Using an ohmmeter, test continuity between terminals 3 and 5 then 4 and 6 - should have no reading.

WARNING

LINE VOLTAGE NOW PRESENT.

3. With power on, energize relay coil and retest with ohmmeter - should read continuous.
4. If not as above, replace.



TESTING REVERSING RELAY CONTACTS

S-20 CHECKING DEFROST RELAY CONTACTS

WARNING

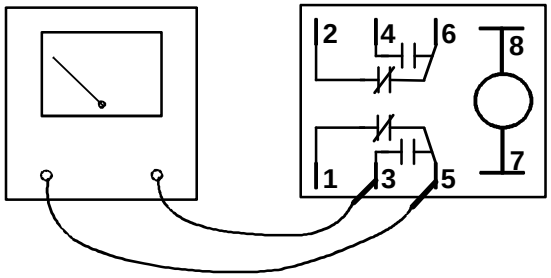
Disconnect Electrical Power Supply:

1. Remove the wire leads from terminals 2 & 6 and from terminals 3 and 5.
2. Using an ohmmeter, test continuity between terminals 2 & 6, and 3 & 5. Contacts 3 & 5, and terminals 4 & 6 are normally open - should not test continuous. Contacts 2 & 6, and terminals 1 & 5 are normally closed - should test continuous. If not as above, replace relay.
3. Energize the relay by installing a jumper wire across the terminals of the defrost control (30°/70°) and placing another jumper wire from "COM" to "OUT" on the defrost control.

WARNING

LINE VOLTAGE NOW PRESENT.

4. Turn on the power.



TESTING DEFROST RELAY

5. Using an ohmmeter test continuity between terminals 2 & 6 - these should not test continuous.

   Test the continuity between terminals 3 & 5 - should test continuous. If not as above replace the relay.

S-21 CHECKING REVERSING VALVE AND SOLENOID

Occasionally the reversing valve may stick in the heating or cooling position or in the mid-position.

When stuck in the mid-position, part of the discharge gas from the compressor is directed back to the suction side, resulting in excessively high suction pressure. An increase in the suction line temperature through the reversing valve can also be measured. Check operation of the valve by starting the system and switching the operation from COOLING to HEATING cycle.

If the valve fails to change its position, test the voltage (240V) at the valve coil terminals, while the system is on the HEATING cycle.

If no voltage is registered at the coil terminals, check the operation of the reversing relay and the continuity of the connecting wires.

If voltage is registered at the coil, tap the valve body lightly while switching the system from HEATING to COOLING, etc. If this fails to cause the valve to switch positions, remove the coil connector cap and test the continuity of the reversing valve solenoid coil. If the coil does not test continuous - replace it.

If the valve is inoperative - replace it.

S-22 REVERSING VALVE REPLACEMENT

Remove the refrigerant charge from the system.

When brazing a reversing valve into the system, it is of extreme importance that the temperature of the valve does not exceed 250°F. at any time.

Wrap the reversing valve with a large rag saturated with water. "Rewet" the rag and thoroughly cool the valve after each brazing operation of the four joints involved. The wet rag around the reversing valve will eliminate conduction of heat to the valve body when brazing the line connection.

The use of a wet rag sometimes can be a nuisance. There are commercial grades of heat absorbing paste that may be substituted.

After the valve has been installed, leak test, evacuate and recharge.

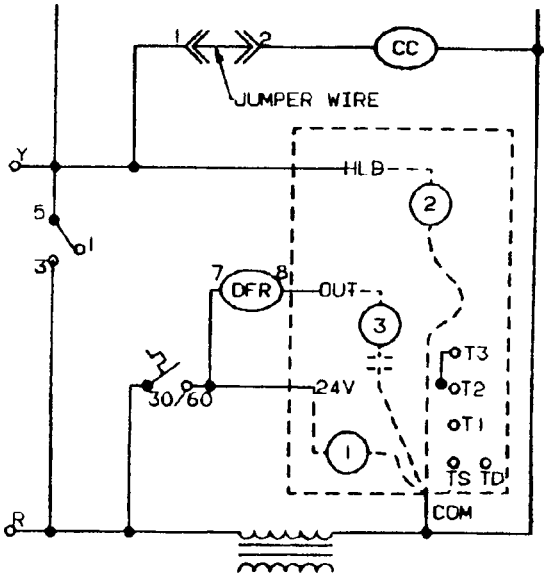
S-23 CHECK FOR DEFROST TIMER BOARD

The Defrost Timer Board is an electronic device which is not field repairable. If a malfunction should occur the complete board must be replaced.

The following has been simplified in order to illustrate the Electronic functions:

1. When the defrost (30/60) control closes (coil temperature at approximately 30°F.), the solid state board becomes programmed.
2. Whenever the (CC) compressor contactor is energized, the solid state timer counts the compressor run time. If (CC) cycles those accumulated minutes are retained as long as the Defrost (30/60) control stays closed.

   With the wire connected to T_3 terminal, the count time is for 90 minutes (factory wired). Terminal T_2 = 60 minutes, terminal T_1 = 30 minutes (field changeable) - Timer count time may be accelerated for testing only, by shorting TST Terminals. (Example: 90 minutes = approximately 21 seconds).
3. At end of the programmed time, common circuit (C) is made to the (OUT) terminal. The defrost (DFR) relay becomes energized and will stay energized until defrost (30/60) control opens by coil temperature, or after 10 minutes of run time (Step 2). Maximum defrost time limited to 10 minutes compressor run time.



1 PROGRAM STARTS

2 TIMER COUNTS

3 END OF COUNT: TIMER CLOSES

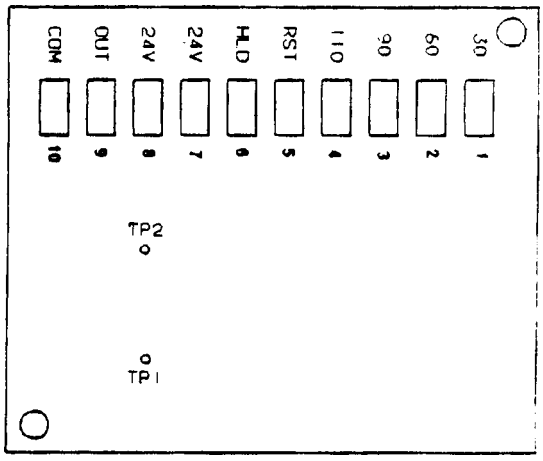
S-24 CHECKING DEFROST TIME BOARD SEQUENCE

To check the defrost timer board for proper sequencing, proceed as follows: With power ON; unit not running.

1. Jumper defrost (30/60 control by placing jumper wire from (R) wire of low voltage to (24 V.) terminal of defrost timer board.
2. Using a VOM, measure voltage between (24 V.) terminal and (COM) terminal of defrost timer board - should read 24 VAC.
3. Connect VOM between (24 V.) terminal and (OUT) terminal - should read 0 VAC. If reads 24 VAC - Board may be in defrost mode.
4. With VOM still connected, place the unit in operation, short or jumper two TST terminals on board (Test Terminals Jumpered - Count time speeds up - 90 minutes = approximately 21 seconds).
5. Watch VOM - should read 24 VAC at end of compressor count time, - then read 0 VAC end of defrost compressor run count time (about 2 to 3 seconds after first reading).

SERVICING

NOTE: Below is the alternate Defrost Timer Board. The functions are the same, however the alternate board has one longer count time (110 Minutes) and the Test Terminal TP1 and TP2 are in a different location.



S-25 TESTING DEFROST CONTROL (30°/60°)

1. Install a thermocouple type temperature test lead on the tube adjacent to the defrost control. Insulate the lead point of contact.
2. Check the temperature at which the control closes its contacts (30°F. ± 5°F.)
3. Raise the temperature of the control until opens (60°F. ± 5°F.)
4. If not as above, replace control.

S-50 CHECKING HEATER LIMIT CONTROL(S)

(OPTIONAL ELECTRIC HEATERS)

Each individual heater element is protected with an automatic rest limit control connected in series with each element to prevent overheating of components in case of low airflow. This limit control will open its circuit at approximately 150°F. and close at 110°F,

⚠ WARNING

Disconnect Electrical Power Supply:

1. Remove the wiring from the control terminals.
2. Using an ohmmeter test for continuity across the normally closed contacts. No reading indicates the control is open - replace if necessary.

IF FOUND OPEN - REPLACE - DO NOT WIRE AROUND.

S-51 CHECKING HEATER FUSE LINK

(OPTIONAL ELECTRIC HEATERS)

Each individual heater element is protected with a one time fuse link which is connected in series with the element. The fuse link will open at approximately 333° temperature.

⚠ WARNING

Disconnect Electrical Power Supply:

1. Remove heater element assembly so as to expose fuse link.
2. Using an ohmmeter, test across the fuse link for continuity - no reading indicates the link is open. Replace as necessary.

NOTE: The link is designed to open at approximately 333°F. DO NOT WIRE AROUND - determine reason for failure.

S-52 CHECKING HEATER ELEMENTS

⚠ WARNING

Disconnect Electrical Power Supply:

1. Dissemble and remove the heating element.
2. Visually inspect the heater assembly for any breaks in the wire or broken insulators.
3. Using an ohmmeter, test the element for continuity - no reading indicates the element is open. Replace as necessary.

S-53 OUTDOOR TEMPERATURE CONTROL

(OPTIONAL ITEM)

ATK01or ODTK01 This kit includes an ambient thermostat mounted in a weatherproof box for installation exterior to the unit. This kit is used for ambient control on all Amana package models and remote cooling models.

ATK04 or ODTK04 This kit is the same as the ATK01 except that the thermostat has a 25° limit. This kit is required when installing 24.0 or 28.8 KW electric heat in the SPHO or PHA48 or 60 models.

ATK05 or ODTK02 This kit includes an ambient thermostat and mounting bracket. It can be installed on the control boxes of all Amana remote heat pumps. This kit is also used to control additional heaters for all applications, add to the control box of Amana remote heat pumps; add to the weatherproof box (ATK01, ATK04) of Amana package and remote cooling models.

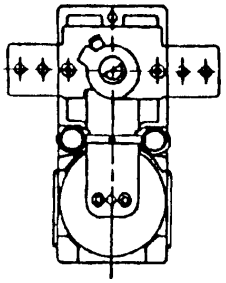
ATK06 This kit is the same as the ATK05 except that the thermostat has a 25° limit. This kit is required when installing 24.0 or 28.8 KW electric heat with the SRHF42-60 or ERHF42-60 models.

SERVICING

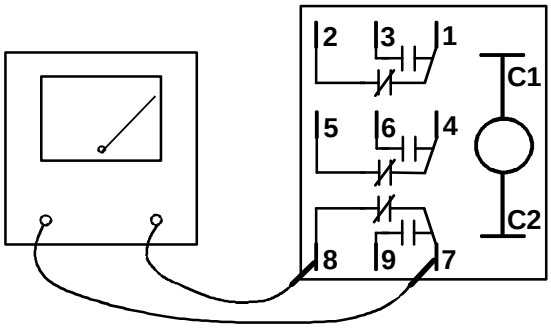
WARNING

Disconnect Electrical Power Supply:

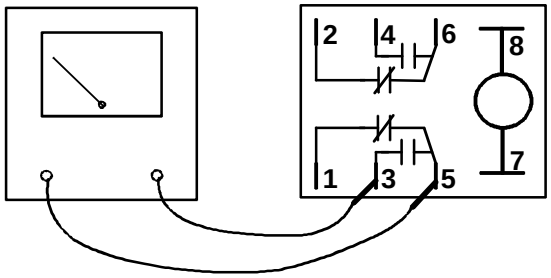
1. Remove field connected low voltage wires from control terminals.
2. In ambient temperature below 60°F., set the knob to correspond with the actual temperature of the control.
3. Using an ohmmeter, test for continuity between the control terminals. It should not test continuous. The control is designed to open at this point with a manual differential of approximately 4°F.
4. In ambient temperature above 60°F., it will be necessary to chill the control.



OUTDOOR TEMPERATURE CONTROL



EMHK01 EMERGENCY HEAT RELAY
24 - 42 MBTU MODELS



EMHK02 EMERGENCY HEAT RELAY
48 - 60 MBTU MODELS

S-54 CHECKING EMERGENCY HEAT RELAY

Emergency Heat relays are used in conjunction with emergency heat room thermostats to lockout the compressor, bypass the outdoor thermostat(s), and turn on all available accessory electric heat.

The Emergency Heat relay(s) plug into sockets provided in the unit control compartment. No additional internal wiring is required to install the relay(s).

The EMHK01 Emergency Heat Kit is used on SPHO/PHA24, 30, 36, & 42 models. The EMHK02 is used on the SPHO/PHA48 and 60.

To check the relay(s):

WARNING

1. Disconnect power to unit and remove relay(s).

2. With an ohmmeter check across relay holding coil terminals C1 and C2 on the EMHK01, or terminals 7 and 8 for EMHK02. Should test continous.
3. Using an ohmmeter test for continuity across terminals 1and 2, 4 and 5, and 7 and 8, of the EMHK01. Or terminals 1 and 5, and 2 and 6 of the EMHK02.
4. Terminals 1 and 3, 4 and 6, and 7 and 9, of the EMHK01 should read open. Terminals 3 and 5, and 4 and 6 of the EMHK02 should read open.
5. Using a seperate transformer, energize the relays holding coil. Using an ohmmeter again test for continuity as was done above. Those contacts previously open should be closed, those previously closed should now be open. If not as above, replace control.

S-55 CHECKING OPTIONAL ECONOMIZER

To check the enthalpy sensor, economizer logic module and damper actuator (motor) as an assembly (logic module mounted on actuator), proceed as follows.

1. With power supply disconnected, remove all wiring from economizer logic module.
2. Check that the factory installed 620 ohm resistor is installed across terminals SR and +. Reinstall the enthalapy sensor on terminals SD and +.
3. Place a jumper from terminals TR to 1.

   Place a jumper from terminals T to T1.

4. Reconnect the two wires to terminals TR1 and TR (common from transformer on TR1, G from low voltage terminal strip on TR. This will supply 24 VAC to terminals TR1 and TR when the indoor blower is operating). Set indoor thermostat to continous blower.
5. With a screwdriver, set the enthalapy change-over set point to position "A".
6. Cool the upper left hand corner of the enthalapy sensor at the vent opening, to simulate low enthalapy conditions.
7. Reconnect power supply. With indoor blower operating, should have 24 VAC at terminals TR1 and TR.
   a. LED on face of logic module should be on.
   b. Motor should drive fresh air damper full open (return air damper closed).
8. Remove jumper from T and T1.
   a. Motor drives fresh air damper full closed (return air open).
9. Connect jumper across P and P1. Using a screwdriver turn minimum position screw -
   a. Clockwise, motor drives fresh air damper full open.
   b. Counterclockwise, motor drives fresh air damper full closed (return air open).
10. Disconnect power to TR1 and TR.
    a. Motor spring returns fresh air damper to full closed.

When finished with test and/or repair, be sure to reset enthalapy change-over set point back to its original position.

S-56 CHECKING DAMPER ACTUATOR ONLY

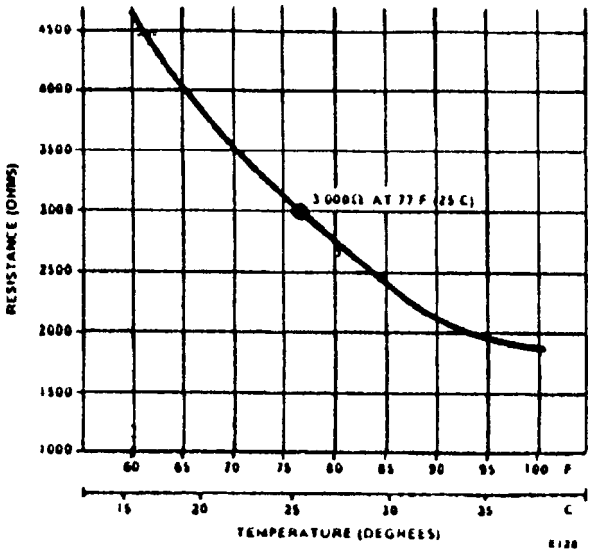
With economizer logic module removed from actuator (motor) proceed as follows.

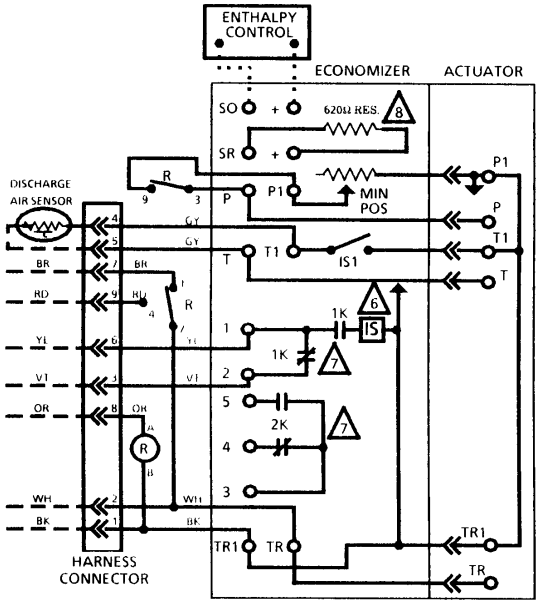
1. Apply 24 VAC to TR and TR1.
2. Jumper T to T1, motor will drive fresh air damper open (return air closed).
3. Remove jumper from T to T1, motor will drive fresh air damper closed.
4. Jumper T to T1, motor will drive fresh air damper open. Disconnect power at TR and TR1, spring should drive motor closed.

S-57 CHECKING DISCHARGE SENSOR (Mixed Air)

Using a thermometer to measure the temperature and an ohmmeter to measure resistance.

1. Disconnect the discharge sensor lead wires.
2. Attach an ohmmeter to the sensor leads and allow temperature to stabilize around sensor.
3. Nominal resistance measurements should be accordance with the following graph.





△7 **Relays 1K and 2K actuator when the enthalapy sensor is lower than the enthalpy set point A through D which was set on the economizer logic module.**

△6 IS **"IS" is an electronic relay who's contacts, IS close when powered by a 24 VAC input**

△8 **Factory installed 620 ohm, 1 watt, 5% resistor should be removed only if a C7400 enthalapy sensor is added to SR and + for differential enthalpy.**

SERVICING

S-100 REFRIGERATION REPAIR PRACTICE

DANGER

ALWAYS REMOVE THE REFRIGERANT CHARGE IN A PROPER MANNER BEFORE APPLYING HEAT TO THE SYSTEM.

When repairing the refrigeration system:

1. Never open a system that is under vacuum. Air and moisture will be drawn in.
2. Plug or cap all openings.
3. Remove all burrs and clean the brazing surfaces of the tubing with sand cloth or paper. Brazing materials do not flow well on oxidized or oily surfaces.
4. Clean the inside of all new tubing to remove oils and pipe chips.
5. When brazing, sweep the tubing with dry nitrogen to prevent the formation of oxides on the inside surfaces.
6. Complete any repair by replacing the liquid line drier in the system, evacuate and charge.

At any time the system has been open for repair, a liquid line filter dryer must be installed. The dryer should be installed between the partition panel and the expansion device.

Heat pump models will require a bi-flow dryer.

BRAZING MATERIALS

Copper to Copper Joints - Sil-Fos used without flux (alloy of 15% silver, 80% copper, and 5% phosphorous). Recommended heat 1400°F.

Copper to Steel Joints - Silver Solder used without a flux (alloy of 30% silver, 38% copper, 32% zinc). Recommended heat - 1200°F.

S-101 LEAK TESTING

Refrigerant leaks are best detected with a halide or electronic leak detector.

However, on outdoor installed systems, provisions must be made to shield the copper element of an halide torch from the sun and wind conditions in order to be able to see the element properly.

NOTE: The flame of the halide detector will glow green in the presence of R-22 refrigerant.

For a system that contains a refrigerant charge and is suspected of having a leak, stop the operation and hold the exploring tube of the detector as close to the tube as possible, check all piping and fittings. If a leak is detected, do not attempt to apply more brazing to the joint. Remove and capture the charge, unbraze the joint, clean and rebraze.

For a system that has been newly repaired and does not contain a charge, connect a cylinder of refrigerant, through a gauge manifold, to the liquid and suction line dill valves and/or liquid line dill valve and compressor process tube.

NOTE: Refrigerant hoses must be equipped with dill valve depressors or special adaptor used. Open the valve on the cylinder and manifold and allow the pressure to build up within the system. Check for and handle leaks, as described above. After the test has been completed, remove and capture the leak test refrigerant.

S-102 EVACUATION

This is the most important part of the entire service procedure. The life and efficiency of the equipment is dependent upon the thoroughness exercised by the serviceman when evacuating air (non-condensables) and moisture from the system.

Air in a system causes high condensing temperature and pressure, resulting in increased power input and reduced performance.

Moisture chemically reacts with the refrigerant and oil to form corrosive hydrofluoric and hydrochloric acids. These attack motor windings and parts, causing breakdown.

The equipment required to thoroughly evacuate the system is a high vacuum pump, capable of producing a vacuum equivalent to 25 microns absolute and a thermocouple vacuum gauge to give a true reading of the vacuum in the system

NOTE: Never use the system compressor as a vacuum pump or run when under a high vacuum. Motor damage could occur.

WARNING SCROLL COMPRESSORS

DO NOT FRONT SEAT THE SERVICE VALVE(S) WITH THE COMPRESSOR OPERATING IN AN ATTEMPT TO SAVE REFRIGERANT. WITH THE SUCTION LINE OF THE COMPRESSOR CLOSED OR SERVERLY RESTRICTED, THE SCROLL COMPRESSOR CAN AND WILL DRAW A DEEP VACUUM VERY QUICKLY. THIS VACUUM CAN CAUSE INTERNAL ARCING OF THE FUSITE RESULTING IN A DAMAGED OR FAILED COMPRESSOR.

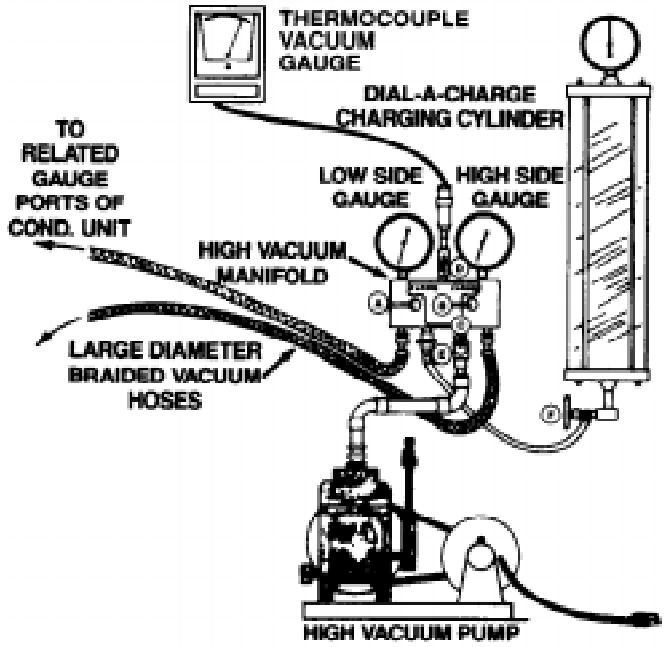
1. Connect the vacuum pump, vacuum tight manifold set with high vacuum hoses, thermocouple vacuum gauge and charging cylinder as shown.
2. If the service dill valves are to be used for evacuation, it is recommended that a core remover be used to lift the core for greater efficiency.
3. Start the vacuum pump and open the shut off valve to the high vacuum gauge manifold only. After the compound gauge (low side) has dropped to approximately 29 inches of vacuum, open the valve to the vacuum thermocouple

TEMPERATURE - PRESSURE (R-22)

Temp. °F.	Gauge Pressure (PSIG) Freon-22	Temp. °F.	Gauge Pressure (PSIG) Freon-22
-40	0.61	60	102.5
-38	1.42	62	106.3
-36	2.27	64	110.2
-34	3.15	65	114.2
-32	4.07	68	118.3
-30	5.02	70	122.5
-28	6.01	72	126.8
-26	7.03	74	131.2
-24	8.09	76	135.7
-22	9.18	78	140.5
-20	10.31	80	145.0
-18	11.48	82	149.5
-16	12.61	84	154.7
-14	13.94	86	159.8
-12	15.24	88	164.9
-10	16.59	90	170.1
-8	17.99	92	175.4
-6	19.44	94	180.9
-4	20.94	96	186.5
-2	22.49	96	192.1
0	24.09	100	197.9
2	25.73	102	203.8
4	27.44	104	209.9
6	29.21	106	216.0
8	31.04	108	222.3
10	32.93	110	228.7
12	34.88	112	235.2
14	36.89	114	241.9
16	38.96	116	248.7
18	41.09	118	255.6
20	43.28	120	262.6
22	45.53	122	269.7
24	47.85	124	276.9
26	50.24	126	284.1
28	52.70	128	291.4
30	55.23	130	298.8
32	57.83	132	306.3
34	60.51	134	314.0
36	63.27	136	321.9
38	66.11	136	329.9
40	69.02	140	338.0
42	71.99	142	346.3
44	75.04	144	355.0
46	78.18	146	364.3
48	81.40	158	374.1
50	84.70	150	384.3
52	88.10	152	392.3
54	91.5	154	401.3
56	95.1	156	411.3
58	98.8	158	421.8
		160	433.3

gauge. See that the vacuum pump will blank-off to a maximum of 25 microns. A high vacuum pump can only produce a good vacuum if its oil is non-contaminated.

4. If the vacuum pump is working properly, close the valve to the vacuum thermocouple gauge and open the high and low side valves to the high vacuum manifold set. With the valve on the charging cylinder closed, open the manifold valve to the cylinder.
5. Evacuate the system to at least 29 inches gauge before opening valve to thermocouple vacuum gauge.
6. Continue to evacuate to a maximum of 250 microns. Close valve to vacuum pump and watch rate of rise. If vacuum does not rise above 1500 microns in three to five minutes, system can be considered properly evacuated.
7. If thermocouple vacuum gauge continues to rise and levels off at about 5000 microns, moisture and non-condensables are still present. If gauge continues to rise a leak is present. Repair and re-evacuate.
8. Close valve to thermocouple vacuum gauge and vacuum pump. Shut off pump and prepare to charge.



EVACUATION

S-103 CHARGING

Charge the system with the exact amount of refrigerant.

Refer to the specification section or check the unit nameplates for the correct refrigerant charge.

An inaccurately charged system will cause future problems.

1. When using an ambient compensated calibrated charging cylinder, allow liquid refrigerant only to enter the high side.
2. After the system will take all it will take, close the valve on the high side of the charging manifold.
3. Start the system and charge the balance of the refrigerant through the low side. DO NOT charge in a liquid form.
4. With the system still running, close the valve on the charging cylinder. At this time, you may still have some

liquid refrigerant in the charging cylinder hose and will definitely have liquid in the liquid hose. Reseat the liquid line core. Slowly open the high side manifold valve and transfer the liquid refrigerant from the liquid line hose and charging cylinder hose into the suction service valve port. CAREFUL: Watch so that liquid refrigerant does not enter the compressor.

5. With the system still running, reseat the suction valve core, remove hose and re-install both valve core caps.
6. Check system for leaks.

NOTE: THIS CHARGING PROCEDURE CAN ONLY BE DONE IN THE COOLING MODE OF OPERATION. ALL MODELS WITH COMPRESSOR PROCESS TUBE ACCESS VALVE CAN BE PROCESSED IN HEATING CYCLE IF THIS VALVE IS USED.

Units having capillary tubes or flow control restrictors can be checked against the Desired Superheat vs. Outdoor Temperature Chart in this section. Coils with thermostatic expansion valves (TEV's) must be checked by subcooling. See "Checking Subcooling and Superheat" sections in this manual.

If a restriction is located, replace the restricted part, replace drier, evacuate and recharge.

S-104 CHECKING COMPRESSOR EFFICIENCY

The reason for compressor inefficiency is broken or damaged suction and/or discharge valves, or scroll flanks on Scroll compressors, reducing the ability of the compressor to pump refrigerant vapor.

The condition of the valves or scroll flanks is checked in the following manner.

1. Attach gauges to the high and low side of the system.
2. Start the system and run a "Cooling Performance Test.

If the test shows-

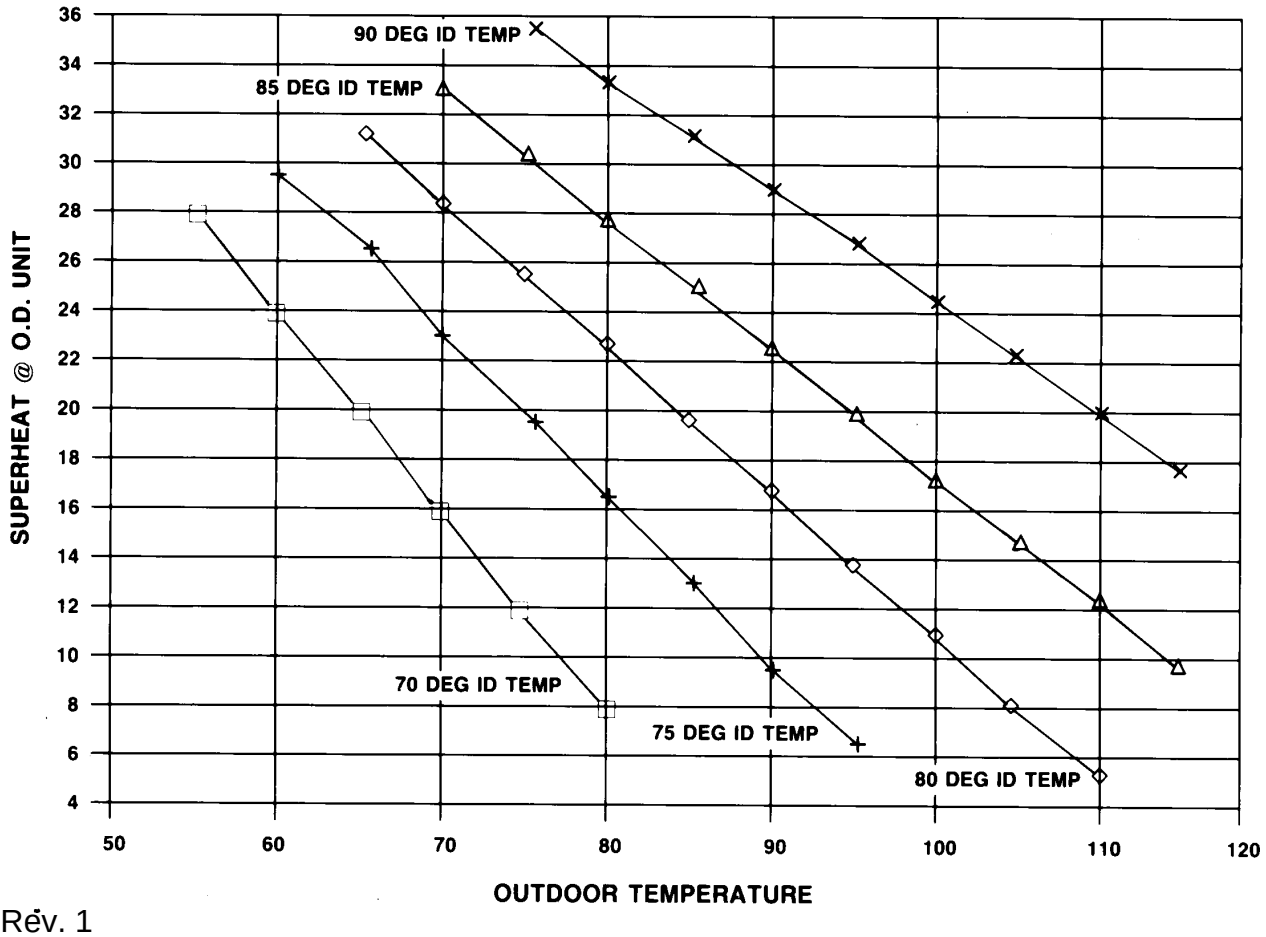
- Þ Below normal high side pressure.
- Þ Above normal low side pressure.
- Þ Low temperature difference across coil.
- Þ Low amp draw at compressor.

-and the charge is correct. The compressor is faulty - replace the compressor. **NOTE:** THIS TEST CANNOT BE DONE IN THE HEATING MODE

S-105 THERMOSTATIC EXPANSION VALVE

The expansion valve is designed to control the rate of liquid refrigerant flow into an evaporator coil in exact proportion to the rate of evaporation of the refrigerant in the coil. The

DESIRED SUPERHEAT vs. OUTDOOR TEMP



amount of refrigerant entering the coil is regulated since the valve responds to temperature of the refrigerant gas leaving the coil (feeler bulb contact) and the pressure of the refrigerant in the coil.

This regulation of the flow prevents the return of liquid refrigerant to the compressor.

The three forces which govern the operation of the valve are: (1) the pressure created in the power assembly by the feeler bulb, (2) evaporator pressure, and (3) the equivalent pressure of the super-heat spring in the valve.

0% bleed type expansion valves are used on the indoor coils. The 0% valve will not allow the system pressures (High and Low side) to equalize during the shut down period. The valve will shut off completely at approximately 100 PSIG Pressure.

Good thermal contact between the feeler bulb and the suction line is essential to satisfactory valve control and performance.

The bulb must be securely fastened with two straps to a clean straight section of the suction line. Application of the bulb to a horizontal run of line is preferred. If a vertical installation cannot be avoided the bulb should be mounted so that the capillary tubing comes out at the top.

THE VALVES PROVIDED BY AMANA ARE DESIGNED TO MEET THE SPECIFICATION REQUIREMENTS FOR OPTIMUM PRODUCT OPERATION. **DO NOT USE SUBSTITUTES.**

S-106 OVERFEEDING

Overfeeding by the expansion valve results in high suction pressure, cold suction line, and possible liquid slugging of the compressor.

If these symptoms are observed:

1. Check for an overcharged unit by referring to the cooling performance charts in the servicing section.
2. Check the operation of the power element in the valve as explained in S-26 Checking Expansion Valve Operation.
3. Check for restricted or plugged equalizer tube.

S-107 UNDERFEEDING

Underfeeding by the expansion valve results in low system capacity and low suction pressures.

If these symptoms are observed:

1. Check for a restricted liquid line or drier. A restriction will be indicated by a temperature drop across the drier.
2. Check the operation of the power element of the valve as described in S-26 Checking Expansion Valve Operation.

S-108 SUPERHEAT

The expansion valves are factory adjusted to maintain 12 to 18 degrees superheat of the suction gas. Before checking the superheat or replacing the valve, perform all the procedures outlined under Air Flow, Refrigerant Charge, Expansion Valve - Overfeeding, Underfeeding. These are the most common causes for evaporator malfunction.

CHECKING SUPERHEAT

Refrigerant gas is considered superheated whenever its temperature is higher than the saturation temperature corresponding to its pressure. The degree of superheat equals the degrees of temperature increase above the saturation temperature at existing pressure. See Temperature - Pressure Chart.

1. Attach an accurate thermometer or preferably a thermocouple type temperature tester to the suction line at a point at least 6" from the compressor.
2. Install a low side pressure gauge on the suction line service valve at the outdoor unit.
3. Record the gauge pressure and the temperature of the line.
4. Convert the suction pressure gauge reading to temperature by finding the gauge reading in Temperature - Pressure Chart and reading to the left, find the temperature in the °F. Column.
5. The difference between the thermometer reading and pressure to temperature conversion is the amount of superheat.

EXAMPLE:

a. Suction Pressure = 84

b. Corresponding Temp. °F. = 50

c. Thermometer on Suction Line = 63°F.

To obtain the degrees temperature of superheat subtract 50.0 from 63.0°F.

The difference is 13° Superheat. The 13° Superheat would fall in the ± range of allowable superheat.

SUPERHEAT ADJUSTMENT

The expansion valves used on Amana coils are factory set and are not field adjustable. If the superheat setting becomes disturbed, replace the valve.

S-109 CHECKING SUBCOOLING

Refrigerant liquid is considered subcooled whenever its temperature is lower than the saturation temperature corresponding to its pressure. The degree of subcooling equals the degrees of temperature decrease below the saturation temperature at the existing pressure.

1. Attach an accurate thermometer or preferably a thermocouple type temperature tester to the liquid line as it leaves the condensing unit.
2. Install a high side pressure gauge on the high side service valve at the front of the unit.

3. Record the gauge pressure and the temperature of the line.
4. Convert the discharge pressure gauge reading to temperature by finding the gauge reading in Temperature - Pressure Chart and reading to the left, find the temperature in the °F. Column.
5. The difference between the thermometer reading and pressure to temperature conversion is the amount of subcooling.

EXAMPLE:

a. Discharge Pressure = 260
b. Corresponding Temp. °F. = 120°
c. Thermometer on Liquid line = 109°F.

To obtain the amount of subcooling subtract 109°F from 120°F.

The difference is 11° subcooling. The normal subcooling range is 9° - 13° subcooling for heat pumps units, 14° - 18° for cooling units and gas packs.

S-110 CHECKING EXPANSION VALVE OPERATION

1. Remove the remote bulb of the expansion valve from the suction line.
2. Start the system and cool the bulb in a container of ice water, closing the valve. As you cool the bulb the suction pressure should fall and the suction temperature will rise.
3. Next warm the bulb in your hand. As you warm the bulb the suction pressure should rise and the suction temperature will fall.
4. If a temperature or pressure change is notices, the expansion valve is operating. If no change is noticed, the valve is restricted, the power element is faulty, or the equalizer tube is plugged.
5. Release or remove the charge, replace the valve and drier, evacuate and recharge.

S-111 CAPILLARY TUBES

The capillary tubes used in conjunction with the indoor and outdoor coils are a predetermined length and bore (I.D.).

It is designed to control the rate of liquid refrigerant flow into an evaporator coil.

The amount of refrigerant that flows through the capillary tubes is regulated by the pressure difference between the high and low sides of the system.

In the cooling cycle when the outdoor air temperature rises, the high side condensing pressure rises. At the same time, the cooling load on the indoor coil increases, causing the low side pressure to rise, but at a slower rate.

Since the high side pressure rises faster when the temperature increases, more refrigerant flows to the evaporator, increasing the cooling capacity of the system.

When the outdoor temperature falls, the reverse takes place. The condensing pressure falls, and the cooling loads on the indoor coil decreases, causing less refrigerant flow.

A strainer is placed on the entering side of the tubes to prevent any foreign material from becoming lodged inside the capillary tubes.

If a restriction should become evident, proceed as follows:

1. Release or remove refrigerant charge.
2. Remove the capillary tubes or tube strainer assembly and replace.
3. Replace liquid line drier, evacuate and recharge.

CHECKING EQUALIZATION TIME

During the "OFF" cycle, the high side pressure bleeds to the low side through the capillary tubes. Check equalization time as follows:

1. Attach a gauge manifold to the suction and liquid line dill valves.
2. Start the system and allow the pressures to stabilize.
3. Stop the system and check the time it takes for the high and low pressure gauge readings to equalize.

If it takes more than seven (7) minutes the capillary tubes are inoperative. Replace, install a liquid line drier, evacuate and recharge.

S-112 CHECKING RESTRICTED LIQUID LINE

When the system is operating, the liquid line is warm to the touch. If the liquid line is restricted, a definite temperature drop will be noticed at the point of restriction. In severe cases, frost will form at the restriction and extend down the line in the direction of the flow.

Discharge and suction pressures will be low, giving the appearance of an undercharged unit. However, the unit will have normal to high subcooling.

If a restriction is located, replace the restricted part, replace drier, evacuate and recharge.

S-113 OVERCHARGE OF REFRIGERANT

An overcharge of refrigerant is normally indicated by an excessively high head pressure.

An evaporator coil, using an expansion valve metering device, will basically modulate and control a flooded evaporator and prevent liquid return to the compressor.

An evaporator coil, using a capillary tube metering device, could allow refrigerant to return to the compressor under extreme overcharge conditions. Also with a capillary tube metering device, extreme cases of insufficient indoor air can cause icing of the indoor coil and liquid return to the compressor, but the head pressure would be lower.

There are other causes for high head pressure which may be found in the "Service Problem Analysis Guide."

If other causes check out normal, an overcharge or a system containing non-condensables would be indicated.

If this system is observed:

1. Start the system.
2. Remove small quantities of gas from the suction line dill valve until the head pressure is reduced to normal.
3. Observe the system while running a cooling performance test, if a shortage of refrigerant is indicated, then the system contains non-condensables.

S-114 NON-CONDENSABLES

If non-condensables are suspected shut down the system and allow the pressures to equalize, wait at least 15 minutes. Compare the pressure, to the temperature of the coldest coil since this is where most of the refrigerant will be. If the pressure indicates a higher temperature than that of the coil temperature, non-condensables are present.

Non-condensables are removed from the system by first removing the refrigerant charge, replacing and/or installing liquid line drier, evacuate and recharging.

S-115 COMPRESSOR BURNOUT

When a compressor burns out, high temperature develops causing the refrigerant, oil and motor insulation to decompose forming acids and sludge.

If a compressor is suspected of being burned-out, attach a refrigerant hose to the liquid line dill valve and properly remove and dispose of the refrigerant.

Now determine if a burn out has actually occurred. Confirm by analyzing an oil sample using a Sporlan Acid Test Kit, AK-3 or its equivalent.

Remove the compressor and obtain an oil sample from the suction stub. If the oil is not acidic, either a burn-out has not occurred or the burn-out is so mild that a complete clean-up is not necessary.

If acid level is unacceptable the system must be cleaned by using the clean-up drier method.

⚠ CAUTION

DO NOT ALLOW THE SLUDGE OR OIL TO CONTACT THE SKIN, SEVERE BURNS MAY RESULT.

NOTE: The Flushing Method using R-11 refrigerant is no longer approved by Amana Refrigeration, Inc.

Suction Line Drier Clean-Up Method

Use AMANA part number R0157057 Suction Line Drier Clean-Up Kit (41 cubic inches). This drier should be installed as close to the compressor as possible, either in a vertical or horizontal position. It may be necessary to use new tubing and form as required.

In all applications, the drier inlet must be above the drier outlet to provide proper oil return to the compressor.

NOTE: At least twelve (12) inches of the suction line immediately out of the compressor stub must be discarded due to burned residue and contaminates.

1. Remove compressor discharge line strainer, liquid line strainer and/or dryer and capillary tubes from indoor and outdoor coils.
2. On an expansion valve coil, remove the liquid line drier and expansion valve.
3. Purge all remaining components with dry nitrogen or carbon dioxide until clean.
4. Install new components including liquid liner drier.
5. Install suction line drier.
6. Braze all joints, leak test, evacuate, and recharge system.
7. Start up the unit and record the pressure drop across the clean-up drier.
8. Continue to run the system for a minimum of twelve (12) hours and recheck the pressure drop across the drier. Pressure drop should not exceed 6 - 8 PSIG.
9. Continue to run the system for several days repeatedly checking pressure drop across the suction line drier. If the pressure drop never exceeds the 6 - 8 PSIG, the drier must be adequate and is trapping the contaminants and it is permissible to leave it in the system.
10. If the pressure drop becomes greater, then it must be replaced and steps 5 through 9 repeated until it does not exceed 6 - 8 PSIG.

NOTICE: Regardless, the cause for burnout must be determined and corrected before the new compressor is started.

S-200 DUCT STATIC PRESSURES AND/OR STATIC PRESSURE DROP ACROSS COIL

This minimum and maximum allowable duct static pressure for the indoor sections are found in the specifications section.

Tables are also provided for each coil, listing quantity of air (CFM) versus static pressure drop across the coil.

Too great of an external static pressure will result in insufficient air that can cause icing of the coil, whereas too much air can cause poor humidity control and condensate to be pulled off the evaporator coil causing condensate leakage. Too much air can also cause motor overloading and in many cases this constitutes a poorly designed system.

To determine proper air movement, proceed as follows:

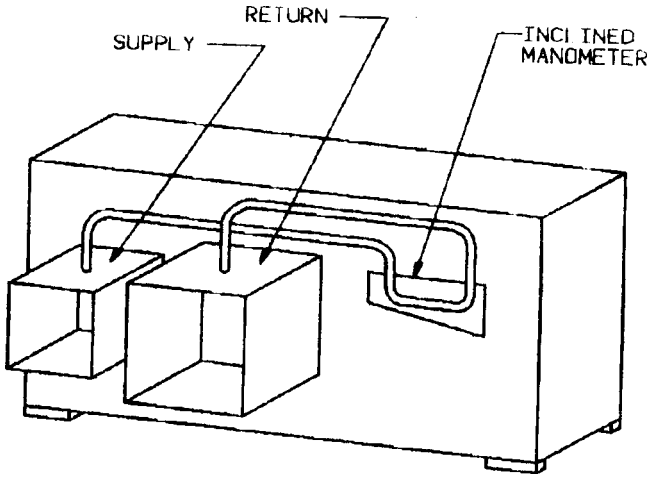
SERVICING

S-201 CHECKING EXTERNAL STATIC PRESSURE

The minimun and maximum allowable duct static pressure is found in the specification section.

Too great of an external static pressure will result in insufficient air that can cause icing of the coil, whereas too much air can cause poor humidity control, and condensate to be pulled off the evaporator coil causing condensate leakage. Too much air can cause motor overloading and in many cases this constitutes a poorly designed system.

1. Using a draft gauge (inclined manometer) measure the static pressure of the return duct at the inlet of the unit, (Negative Pressure).
2. Measure the static pressure of the supply duct, (Positive Pressure).
3. Add the two readings together.



TOTAL EXTERNAL STATIC

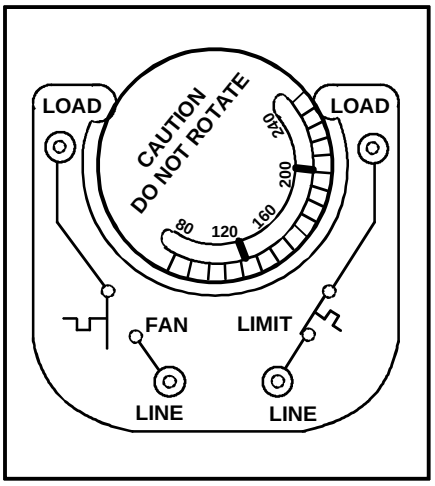
NOTE: Both readings may be taken simultaneously and read directly on the manometer if so desired.

4. Consult proper table for quantity of air.

If the external static pressure exceeds the minimum or maximum allowable statics, check for closed dampers, dirty filters, undersized or poorly laid out ductwork.

S-300 CHECKING COMBINATION FAN AND LIMIT CONTROL

A combination fan and limit switch is used on Amana Package Gas Units. The limit setting is fixed and must not be readjusted in the field.



HONEYWELL FAN AND LIMIT CONTROL

Refer to the specification section to determine the proper limit cut-out temperature for the model being serviced.

In all instances the limit control is wired in series with the ignition control.

If the temperature within the furnace should exceed this setting, the control will open, de-energizing the ignition control which in turn will open the electrical circuit to the gas valve.

The control will automatically reset when the temperature within the combustion chamber is sufficiently lowered.

⚠ WARNING

Disconnect Electrical Power Supply:

1. Remove load and line voltage wires at fan portion terminals.
2. Set fan "OFF" and fan "ON" indicators above the heat exchanger temperature.
3. With an ohmmeter, test between these two terminals, should have no reading.
4. Set fan "OFF" and fan "ON" indicators below the heat exchanger temperature.
5. With an ohmmeter, test between these two terminals, should read continuous.

If not as above, replace the complete control.

6. Remove load and line voltage wires at limit position terminals.

7. With an ohmmeter, test between these two terminals, should read continuous unless heat exchanger temperature is above limit control setting.
8. A fan control set too low may not let the furnace recycle until the discharge air is uncomfortable.

If not as above, replace the complete control.

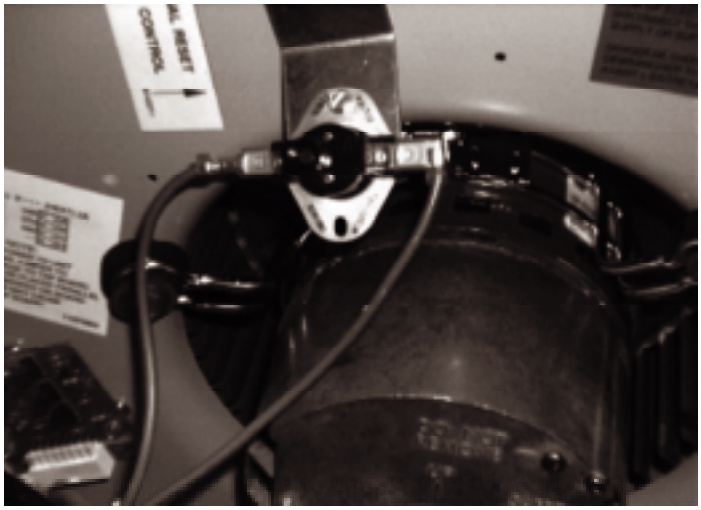
NOTICE: Reset the fan "OFF" and "ON" settings back to their original positions. These settings may be found in the specification section..

S-301 CHECKING AUXILIARY LIMIT CONTROL

An additional manual reset limit control is required for safety control of high temperature within the furnace or duct work.

This control is preset non-adjustable control mounted in the blower compartment area.

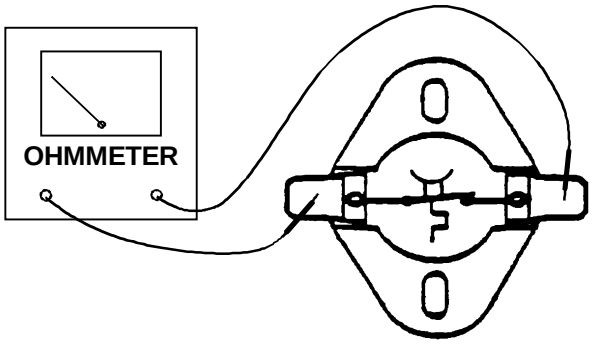
It is connected in series with the limit control wiring to the ignition control. If its temperature should be exceeded, it will open, interrupting the voltage to the gas valve causing it to close.



WARNING

Disconnect Electrical Power Supply:

1. Remove the wires from the auxiliary limit control terminals.
2. Using an ohmmeter, test for continuity across the two terminals. No reading indicates the control is open. Push the red reset button, test again - if still open, replace the control.



LIMIT OR AUXILIARY LIMIT CONTROL

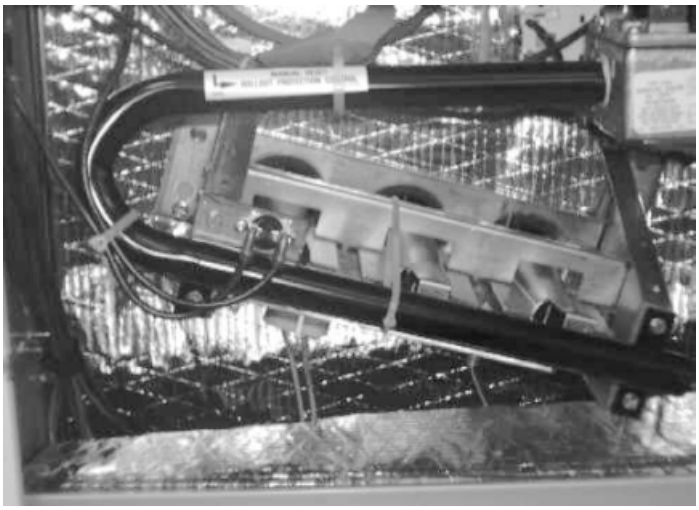
The Auxiliary Limit Control setting are as follows:

PGA/PGB/SPCG MODELS	LIMIT °F
24045, 30045, 36045	170
24070, 30070, 36070, 42090, 48090	180
24090, 30090, 36090	190
42115, 48115, 60090, 60115	210
48135, 60135	200

NOTE: Units built prior to December 1990 (9012_____ serial numbers) will have a 160°F control installed. If nuisance limit trips occur, change the control as shown in the chart above.

S-302 CHECKING FLAME ROLLOUT SWITCH

Package Gas Units with serial numbers beginning 9001 and later use a temperature activated manual reset control mounted to the manifold assembly.



This control is wired is series with the gas valve. The control is designed to open should a flame roll out occur. An over firing condition or flame impingment on the heat shield may also cause the control to open.

To aid in identifying these controls, color coded labels are attached back of these controls. See chart below for temperature settings and color codes.

The controls are designed to open as follows:

SPCG/PGA/PGB24, 30, 36 045	220°	YELLOW
SPCG/PGA/PGB42, 48, 60 090 & 115	220°	YELLOW
SPCG/PGA/PGB24, 30, 36 070 & 090	240°	GREEN

If the rollout control has opened the circuit between the ignition control and gas valve will be interrupted. the ignition will cycle and try to light 3 times but will not sense flame and go into lockout. The servicer should reset the ignition control by opening and closing the thermostat circuit. The servicer should look for the ignitor glowing which indicates there is power to the ignition control. The servicer should measure the voltage between each side of the rollout control and ground while the ignition control is try to power the gas valve.

a. If no voltage is measured on either side of control it indicates ignition control or wiring to control problem.
b. If voltage is measured on one side of the control and not the other, it indicates the control is open.
c. If voltage is measured on both sides of the control the wiring to gas valve or valve is a fault.

Servicing proceedure with furnace not firing.

1. Confirm that the heat shield that sit on top of the manifold is present and correctly installed.
2. Confirm that the outer door was in place and all screws tightened. (No leaks under the door.)
3. Check to see if any damage was done to the furnace especially the wiring.
4. Confirm that heat exchanger is not obstructed by feeling for discharge air from the flue hood when the combustion blower is running but the unit is not firing.

If the above steps do not suggest the reason the control has tripped the furnace should be fired.

1. Remove the heating compartment door.
2. Turn of the power or open the thermostat circuit.
3. Reset the roll-out control.
4. Turn power on and put the unit into a call for cooling.

⚠ CAUTION

Assume flame roll-out could occur. Keep face and hands a safe distance from burner area.

5. Look under the heat shield as the unit is running. Flames should be drawn into firing tubes.
   A. If only one burners flame is not drawn into the tube, that tube is restricted.
   B. If with out the air circulation blower running, all flames are not drawn into the tubes either the collector box, combustion blower, or flue outlet is obstructed. If the combustion blower or flue outlet is obstructed, the pressure switch should have opened preventing the unit from firing, also inspect the unit pressure switch and wiring.
   C. If the burner flame is not drawn into the tube only when the air circulation blower is running, then a cracked heat exchanger tube is present.

S-303 CHECKING FUSIBLE LINK (Thermal Cut-out)

Early production SPCG Package Units with manufacturing numbers beginning with P9999___C, and serial numbers beginning with 8912 and prior, had a one time fusible link mounted to the evaporator divider panel in the burner compartment area.

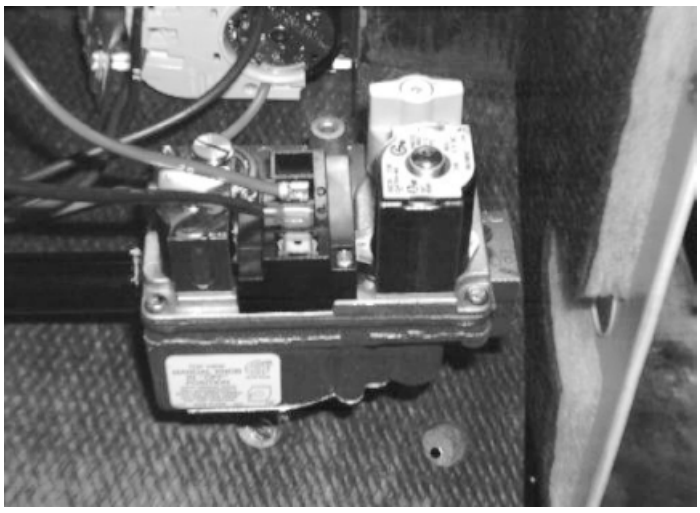
This device is wired in series with the gas valve and is designed to open at a temperature of 219°F (104°C). If found open the fusible link must be replaced and the reason for the high temperature (blocked flue, insufficient air over the heat exchanger, flame rollout, etc.) must be corrected.

NOTE: SPCG products with serial numbers beginning with 9001 and later, and all PGA and PGB models use a manual reset Flame Rollout Switch in place of the fusible link. See S-XX " Checking Flame Rollout Switch".

S-304 CHECKING GAS VALVE (Redundant)

A combination redundant operator type gas valve which provides all manual and automatic control functions required for gas fired heating equipment is used.

The valve provides control of main burner gas flow, pressure regulation, and 100 percent safety shut-off.



⚠ WARNING

Disconnect Electrical Power Supply:

1. Remove wire connections from gas valve terminals.

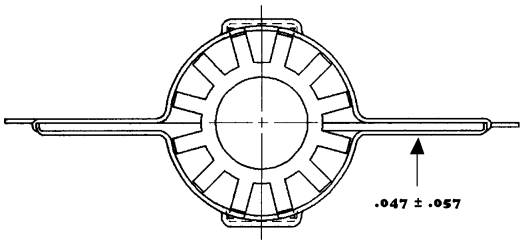
2. Using an ohmmeter, test across the gas valve coil terminals, both the redundant and the main valve.
3. Should read approximately 130 Ohms for the Robertshaw main valve operator coils. The redundant coil will vary somewhat as well.
4. Reverse leads. Some redundant coils have (dividers) diodes.

If not as above, replace the entire valve.

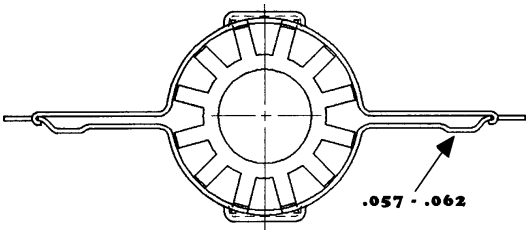
S-305 CHECKING MAIN BURNERS

The main burners are used to provide complete combustion of various fuels in a limited space, and transfer this heat of the burning process to the heat exchanger.

Proper ignition, combustion, and extinction are primarily due to burner design, orifice sizing, gas pressure, primary and secondary air, vent and proper seating of burners.



STANDARD BURNER



"P" STYLE BURNER

⚠ WARNING

Disconnect Gas and Electrical Power Supply:

In checking main burners, look for signs of rust, oversized and undersized carryover ports restricted with foreign material, etc .

S-306 CHECKING ORIFICES

A predetermined fixed gas orifice is used in all of these furnaces. That is an orifice which has a fixed bore and position.

No resizing should be attempted until all factors are taken into consideration such as inlet an manifold gas pressure, alignment, and positioning, specific gravity and BTU content of the gas being consumed.

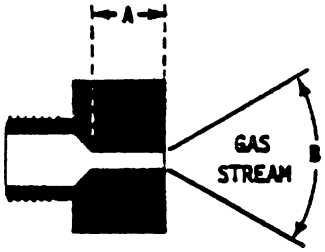
The only time resizing is required is when a reduction in firing rate is required for an increase in altitude.

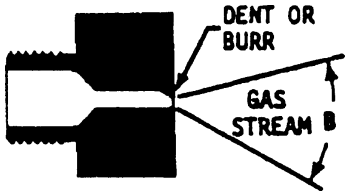
Orifices should be treated with care in order to prevent damage. They should be removed and installed with a box-end wrench in order to prevent distortion. In no instance should an orifice be peened over and redrilled. This will change the angle or deflection of the vacuum effect or entraining of primary air, which will make it difficult to adjust the flame properly. This same problem can occur if an orifice spud of a different length is substituted.

⚠ WARNING

Disconnect Gas and Electrical Power Supply:

1. Check orifice visually for distortion and/or burrs.
2. Check orifice size with orifice sizing drills.
3. If resizing is required, a new orifice of the same physical size and angle with proper drill size opening should be installed.





The length of Dimension "A" determines included angle of Spray "B".

A dent of burr will cause severe deflection of gas stream.

S-307 CHECKING GAS PRESSURE

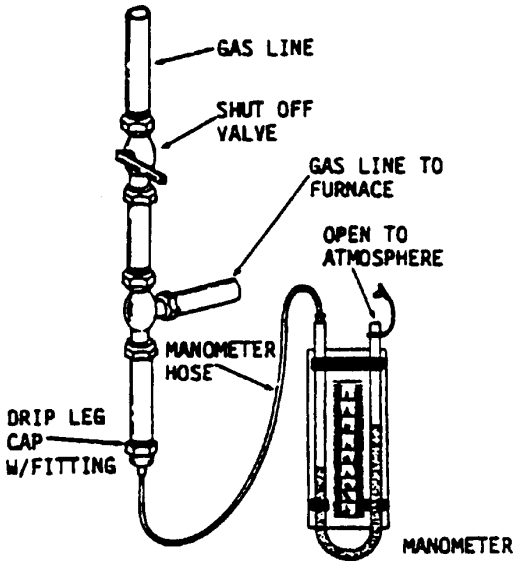
Gas inlet and manifold pressures should be checked and adjusted in accordance to the type of fuel being consumed.

⚠ WARNING

Disconnect Gas and Electrical Power Supply:

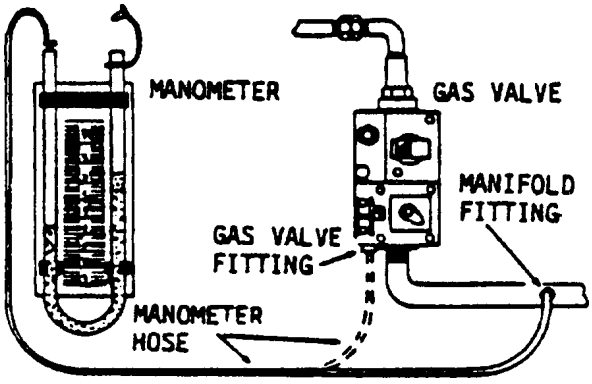
1. Connect a water manometer or adequate gauge upstream of the gas valve. (If no provisions are provided, we suggest removing cap from dripleg and install a predrilled cap with hose fitting as shown below.)

SERVICING



MEASURING INLET GAS PRESSURE

2. Remove the pressure tap fitting at the manifold if provided or from the gas valve and install fitting to connect another manometer or gauge.



MEASURING MANIFOLD GAS PRESSURE

With Power ON:

⚠ WARNING

LINE VOLTAGE NOW PRESENT.

3. Put furnace into heating cycle and turn on all other gas consuming appliances.

For **NATURAL GAS:**

a. Inlet pressure should be a nominal 7" w.c.
b. Manifold pressure should be 3.5 ± .3"w.c. (Canadian - Sea Level 4.2" ± .3" w.c.)

For **PROPANE GAS:**

a. Inlet pressure should be a nominal 11" w.c.
b. Manifold pressure should be a nominal 10" w.c.

If operating pressures differ from above, make necessary pressure regulator adjustments, check piping size, etc., and/or consult with local utility.

S-308 CHECKING FOR DELAYED IGNITION

Delayed ignition is a delay in lighting a combustible mixture of gas and air which has accumulated in the combustion chamber.

When the mixture does ignite, it may explode and/or rollout causing burning in the burner venturi.

If delayed ignition should occur, the following should be checked:

1. Improper gas pressure - adjust to proper pressure. (See S-307)
2. Improper burner positioning - burners should be in locating slots, level front to rear and left to right.
3. Carry over (lighter tube or cross lighter) obstructed - clean.
4. Main burner orifice(s) deformed, or out of alignment to burner - replace.

S-309 CHECKING FOR FLASH-BACK

Flash-back will also cause burning in the burner venturi, but is caused by the burning speed being greater than the gas-air flow velocity coming from a burner port.

Flash-back may occur at the moment of ignition, after a burner heats up or when the burner turns off. The latter is known as extinction pop.

Since the end results of flash-back and delayed ignition can be the same (burning in the burner venturi) a definite attempt should be made to determine which has occurred.

If flash-back should occur, check for the following:

1. Improper gas pressure - adjust to proper pressure. See S-**307**.
2. Check burner for proper alignment and/or replace burner.
3. Improper orifice size - check orifice for obstruction.

S-310 CHECKING PRESSURE CONTROL

A pressure control device is used to measure negative pressure at the induced draft blower motor inlet to detect a partial or blocked flue.

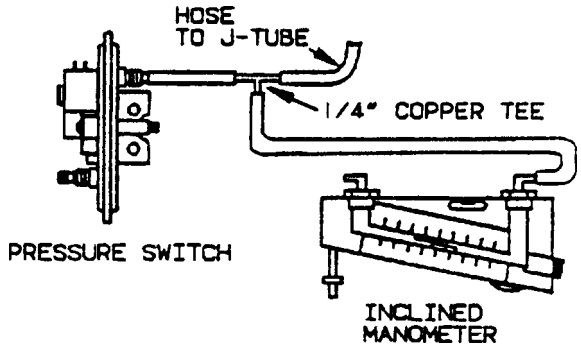
⚠ WARNING

Disconnect Electrical Power Supply:

1. Remove wires from the three electrical terminals.
2. Using a VOM check from common terminal to NC (Normally Closed) - should read closed. Check from Common to NO (Normally Open) - should read open.

If switch reads as above proceed to Step 3, otherwise replace control.

3. Remove the pressure control hose from the control and interconnect with an inclined manometer as shown:



Reconnect wires OR-16 to Common and BL-10 to NC terminals.

With Power ON:

WARNING

LINE VOLTAGE NOW PRESENT.

4. Energize furnace for heating cycle. The combustion relay should be energized and the induced draft blower motor will begin to run. The inclined manometer should read approximately negative 1.35" to 1.60" W.C. with no combustion. Refer to the Product Design section for proper "J" Tube positioning.
5. Remove and check the two electrical wires and using the VOM check from Common to NC (Normally Closed) - should read open. Check from Common to NO (Normally Open) - should read closed.

If not as above, replace control.

6. Reconnect all three wires to the control and place in a heating cycle.
7. As the unit fires, the inclined manometer negitive pressure will drop to -.75 to -.85" W.C. for the small cabinets and -.80 to -.90" W.C. for the large cabinets.
8. Begin to restrict the flue outlet until the pressure control trips - cycling OFF the burner. The control will trip at a -.65" $\pm$ .06"W.C.
8. If not as listed, replace control.

S-311 HIGH ALTITUDE APPLICATION (USA)

For those altitudes starting at 3500 feet and above, it may be necessary to replace either the pressure switch or orifices. In some instances both must be changed.

These changes are required to compensate for the reduction in atmospheric pressure (less available air for combustion) as the altitude increases.

The following charts give the orifice drill size and high altitude kit required for different elevations.

0 to 3500 ft.	Nat #43	Original Equipment Factory Installed
3500 to 6000 ft.	Nat #44	HANG01 or NG01A High Altitude Orifice Kit (uses C6437604 orifices)
6000 to 7500 ft.	Nat #45	HANG02 or NG02A High Altitude Orifice Kit (uses C6437605 orifices)
7500 to 8500 ft.	Nat #46	HANG03 or NG03A High Altitude Orifice Kit (uses C6437607 orifices)
8500 to 10000 ft.	Nat #47	HANG04 or NG04A High Altitude Orifice Kit (uses C6437604 orifices)
10000 to 11500 ft.	Nat #48	HANG05 or NG05A High Altitude Orifice Kit (uses C6437608 orifices)
0 to 4500 ft.	Propane #54	LPTK06 Propane Conversion Kit (uses C6437602 orifices)
4500 to 7500 ft.	Propane #55	HALP01 or LP01A Propane Conversion Kit (uses C6437609 orifices)
7500 to 11500 ft.	Propane #56	HALP02 or LP02A Propane Conversion Kit (uses C6437610 orifices)

0 to 4000 ft.	-.65" W.C.	Original Equipment Factory Installed
4000 to 7000 ft.	-.54" W.C.	HAPS04 or PS804A High Altitude Pressure Switch Kit (C6456508 Pressure Switch)
7000 to 11500 ft.	-.30" W.C.	HAPS02 or PS809A High Altitude Pressure Switch Kit (C6456509 Pressure Switch)

S-312 CHECKING HOT SURFACE IGNITOR

A silicone carbide restrictive element ignitor is used for ignition. The normal operating temperature is approximately 2550°F.

WARNING

Disconnect Electrical Power Supply:

1. Ignitor cool - approximately 70 - 75°F.
2. Disconnect the ignitor from the Ignition Control Module and line voltage terminal board.

3. Using an ohmmeter measure the resistance of the ignitor - should read between 50 to 400 ohms for Norton 201ignitors (white leads), or 40 to 75 ohms for Norton 271 ignitors (red leads).
4. Reconnect ignitor.

With Power ON:

⚠ WARNING

LINE VOLTAGE NOW PRESENT.

5. Place unit in heating cycle, measure current draw of ignitor during pre-heat cycle. Should read approximately 4 to 5 amps.

S-313 CHECKING RS HS780B IGNITION CONTROL MODULE

NOTE: Failure to earth ground the furnace, reversing the neutral and hot wire connection to the line (polarity), or a high resistance connection in the ground or neutral lines may cause the control to lockout due to failure to flame sense.

⚠ WARNING

To avoid the risk of electrical shock, wiring to the unit must be properly polarized and grounded. Disconnect power before performing service listed below.

The ground wire must run from the furnace all the way back to the electrical panel. Proper grounding can be confirmed by disconnecting the electrical power and measuring resistance between the neutral (white) connection and the burner closest to the flame sensor. Resistance should be less than 10 ohms.

The ignition control module is a combination electronic and electro-mechanical device an is not field repairable. Complete unit must be replaced.

⚠ WARNING

Disconnect Electrical Power Supply:

1. Disconnect wires from TR and TH. Using an ohmmeter, should measure approximately 12 ohms. If no reading, replace module.

Additional testing must be completed within a given time element due to retry and lockout nature of control.

With Power ON:

⚠ WARNING

LINE VOLTAGE NOW PRESENT.

Furnace thermostat calling for heat (45 second preheat time).

1. Check for 230 volts from L1 terminal of control module to L2. No voltage - check wire connections, continuity, etc.
2. Voltage Present - check for voltage from IGN terminal to IGN terminal. No voltage - replace Ignition Control Module.

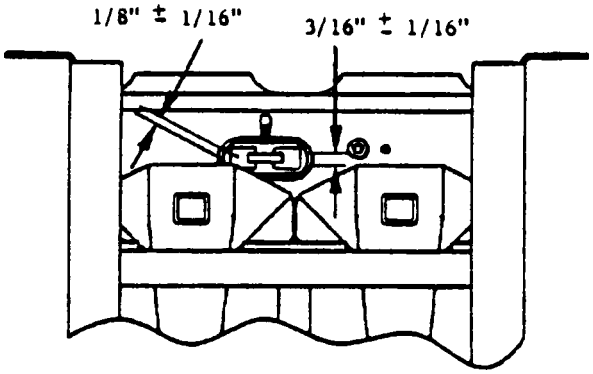
   Note: Voltage to ignitor should read minimum of 50 volts, maximum 120 volts. For this control to provide 120 volts to the ignitor from a 230 volt power supply, the control must chop line cycles. This is accomplished by passing 1 line cycle and blocking 3 line cycles. This change in the waveform causes different voltmeters to read this voltage differently.

   Note: If the ignitor is disconnected from the control, 230 volts may be read across the ignitor terminals. The above tests should be done with the ignitor connected to the control.
3. After 38 seconds preheat time, check for 24 volts at terminals VALVE to GND of control module (7 seconds only) no voltage - bad ignition control module, replace.
4. If above tests are not completed within the prescribed time limit, the control will retry two more times. However, you will have a 38 second delay before the next try. After the second retry, if no ignition, the control will go into lockout. To reset, must de-energize control for approximately five (5) seconds.

S-314 CHECKING FLAME SENSOR

A flame sensing device is used in conjunction with the ignition control module to prove combustion. If a micro-amp signal is not present the control will de-energize the gas valve and "retry" for ignition or lockout.

The following drawing illustrates from a bottom view, the approximate distances for the ignitor and flame sensor to the gas inshot burner. You will note they are not in the main burner stream, but along the carry over ports.



SERVICING

WARNING

Disconnect Electrical Power Supply:

1. Disconnect the flame sensor wire from terminal FP of the ignition control module.
2. Connect a micro-amp meter in series with this wire and terminal RS.
3. Be sure the negative side of the meter is to the wire and the positive of the meter is to terminal RS.

With Power ON:

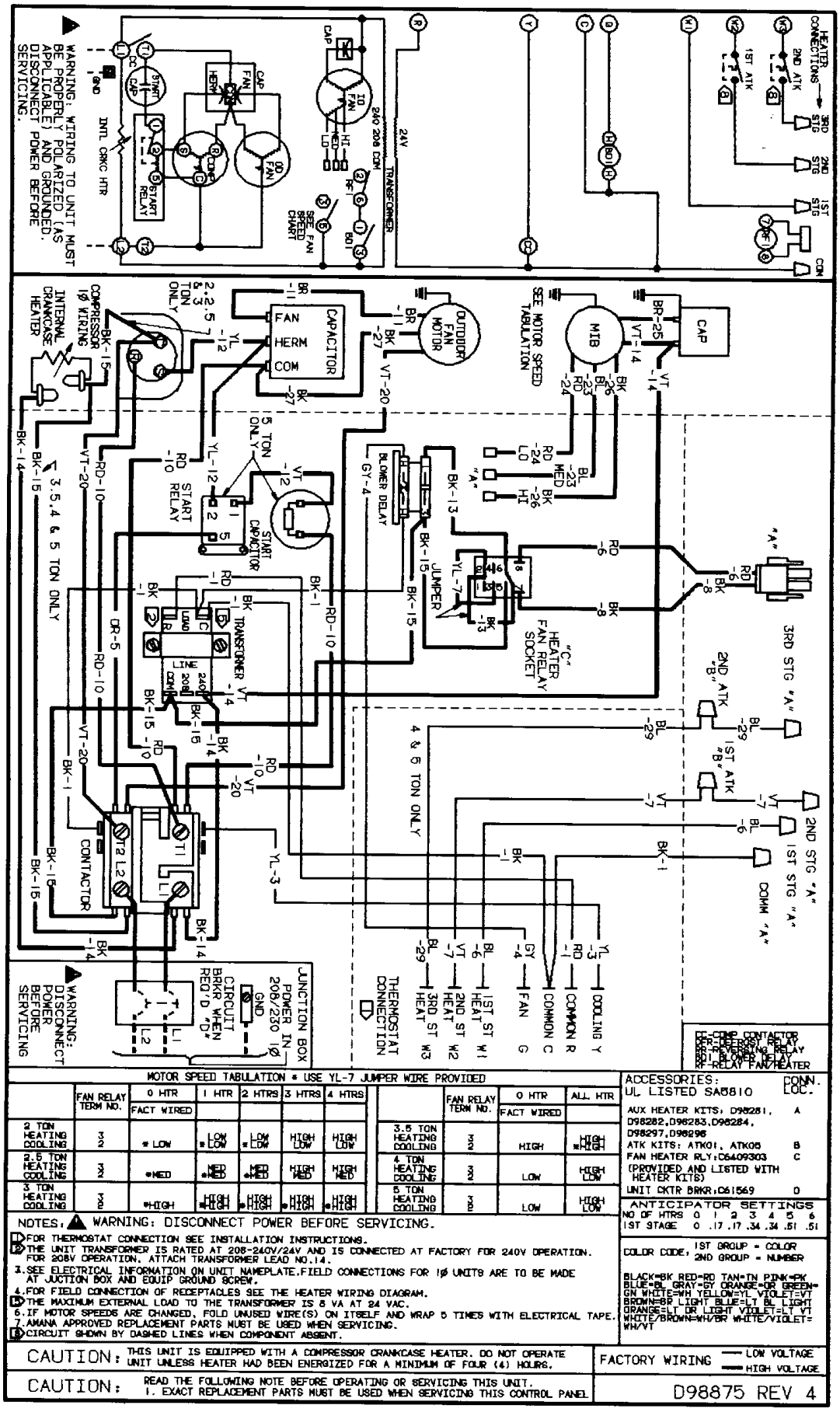
WARNING

LINE VOLTAGE NOW PRESENT.

4. Place the unit into a heating cycle.
5. As soon as flame is established a micro-amp reading should be evident once proof of flame (micro-amp reading) is established, the hot surface ignitor will be de-energized.
6. The micro-amp reading should be approximately 1 to 5 micro-amps. If the micro-amp reading is less than the minimum specified, check for high resistance wiring connections, the distance between the sensor and burner, flame sensor connections or poor grounding.
7. If absolutely no reading, check for continuity on all components and if good - replace ignition control module.

NOTE: Contaminated fuel or combustion air can create a nearly invisible coating on the flame sensor. This coating works as an insulator causing a loss in the flame sense signal. If this situation occurs the flame sensor must be cleaned with emery cloth or steel wool.

WIRING DIAGRAMS



MOTOR SPEED TABULATION * USE YL-7 JUMPER WIRE PROVIDED

	FAN RELAY TERM NO.	0 HTR FACT WIRED	1 HTR	2 HTRS	3 HTRS	4 HTRS
2 TON HEATING COOLING	M2	* LOW	*LOW LOW	*LOW LOW	HIGH LOW	HIGH LOW
2.5 TON HEATING COOLING	M2	*MED	*MED MED	*MED MED	HIGH MED	HIGH MED
3 TON HEATING COOLING	M2	*HIGH	*HIGH HIGH	*HIGH HIGH	*HIGH HIGH	*HIGH HIGH

	FAN RELAY TERM NO.	0 HTR FACT WIRED	ALL HTR
3.5 TON HEATING COOLING	M2	HIGH	*HIGH HIGH
4 TON HEATING COOLING	M2	LOW	HIGH LOW
5 TON HEATING COOLING	M2	LOW	HIGH LOW

ACCESSORIES: UL LISTED SA5810

	CONN. LOC.
AUX HEATER KITS; D98281, D98282,D98283,D98284, D98297,D98298	A
ATK KITS: ATK01, ATK05	B
FAN HEATER RLY:D6409303 (PROVIDED AND LISTED WITH HEATER KITS)	C
UNIT CKTR BRKR:D61569	D

ANTICIPATOR SETTINGS

NO OF HTRS	0	1	2	3	4	5	6
1ST STAGE	0	.17	.17	.34	.34	.51	.51

COLOR CODE, 1ST GROUP = COLOR, 2ND GROUP = NUMBER

BLACK=BK RED=RD TAN=TN PINK=PK
BLUE=BL GRAY=GY ORANGE=OR GREEN=GN WHITE=WH YELLOW=YL VIOLET=VT
BROWN=BR LIGHT BLUE=LT BL LIGHT ORANGE=LT OR LIGHT VIOLET=LT VT
WHITE/BROWN=WH/BR WHITE/VIOLET=WH/VT

NOTES: ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.

1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO.14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 1Ø UNITS ARE TO BE MADE AT JUCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 5 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
8. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.

CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT. 1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL.

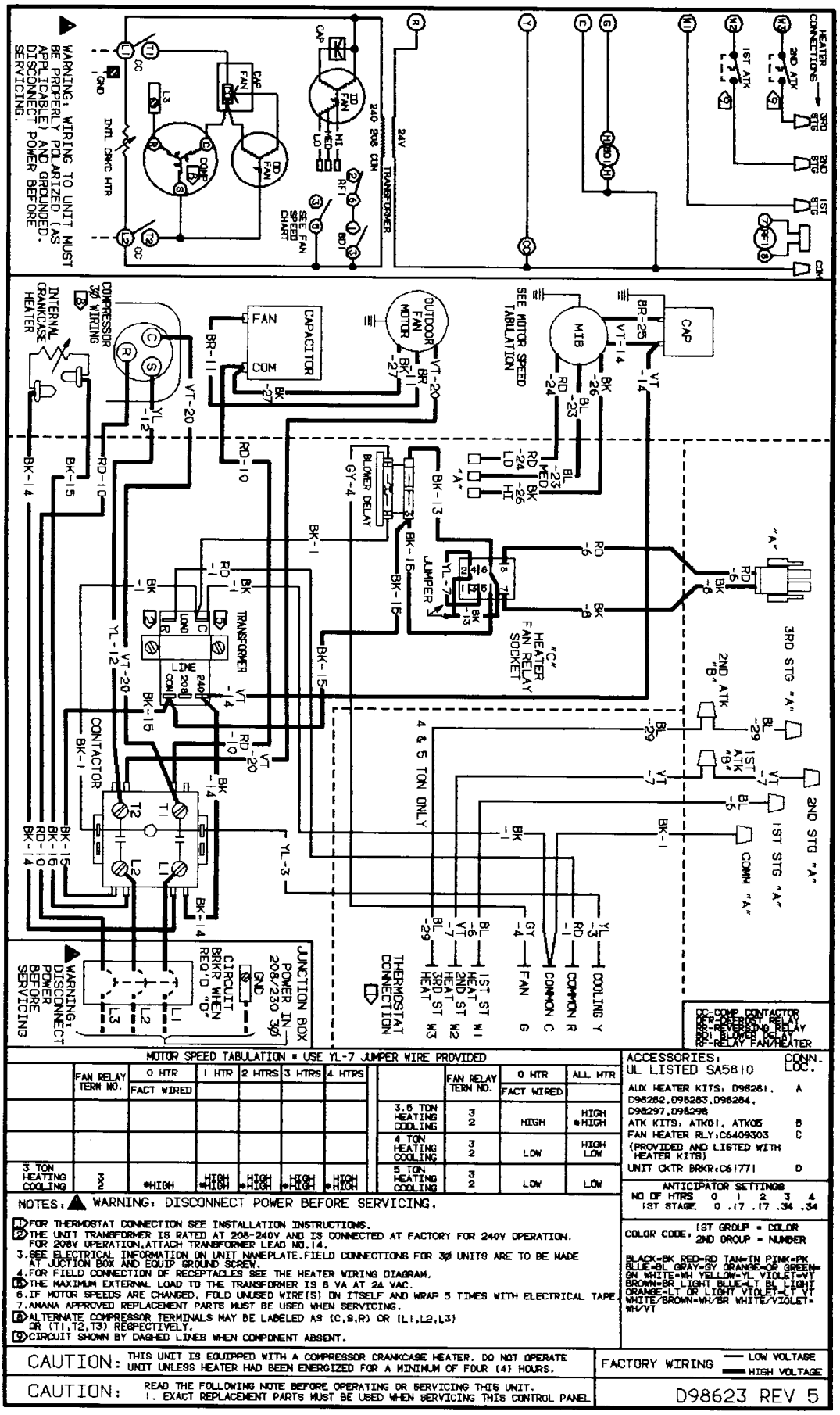
FACTORY WIRING — LOW VOLTAGE, HIGH VOLTAGE

D98875 REV 4

⚠ WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



MOTOR SPEED TABULATION * USE YL-7 JUMPER WIRE PROVIDED

	FAN RELAY TERM NO.	0 HTR FACT WIRED	1 HTR	2 HTRS	3 HTRS	4 HTRS
3 TON HEATING COOLING	M2	*HIGH	HIGH *HIGH	HIGH *HIGH	HIGH *HIGH	HIGH *HIGH

	FAN RELAY TERM NO.	0 HTR FACT WIRED	ALL HTR
3.5 TON HEATING COOLING	M2	HIGH	HIGH *HIGH
4 TON HEATING COOLING	M2	LOW	HIGH LOW
5 TON HEATING COOLING	M2	LOW	LOW

ACCESSORIES: UL LISTED SA5810

	CONN. LOC.
AUX HEATER KITS: D98281, D98282, D98283, D98284, D98297, D98298	A
ATK KITS: ATK01, ATK05	B
FAN HEATER RLY: C6409303 (PROVIDED AND LISTED WITH HEATER KITS)	C
UNIT CKTR BRKR: C61771	D

ANTICIPATOR SETTINGS

NO OF HTRS	0	1	2	3	4
1ST STAGE	0	.17	.17	.34	.34

COLOR CODE: 1ST GROUP = COLOR, 2ND GROUP = NUMBER

BLACK=BK RED=RD TAN=TN PINK=PK BLUE=BL GRAY=GY ORANGE=OR GREEN=GN WHITE=WH YELLOW=YL VIOLET=VT BROWN=BR LIGHT BLUE=LT BL LIGHT ORANGE=LT OR LIGHT VIOLET=LT VT WHITE/BROWN=WH/BR WHITE/VIOLET=WH/VT

NOTES: ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.

1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO.14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 3Ø UNITS ARE TO BE MADE AT JUCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 6 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
8. ALTERNATE COMPRESSOR TERMINALS MAY BE LABELED AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY.
9. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.

CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT. 1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL.

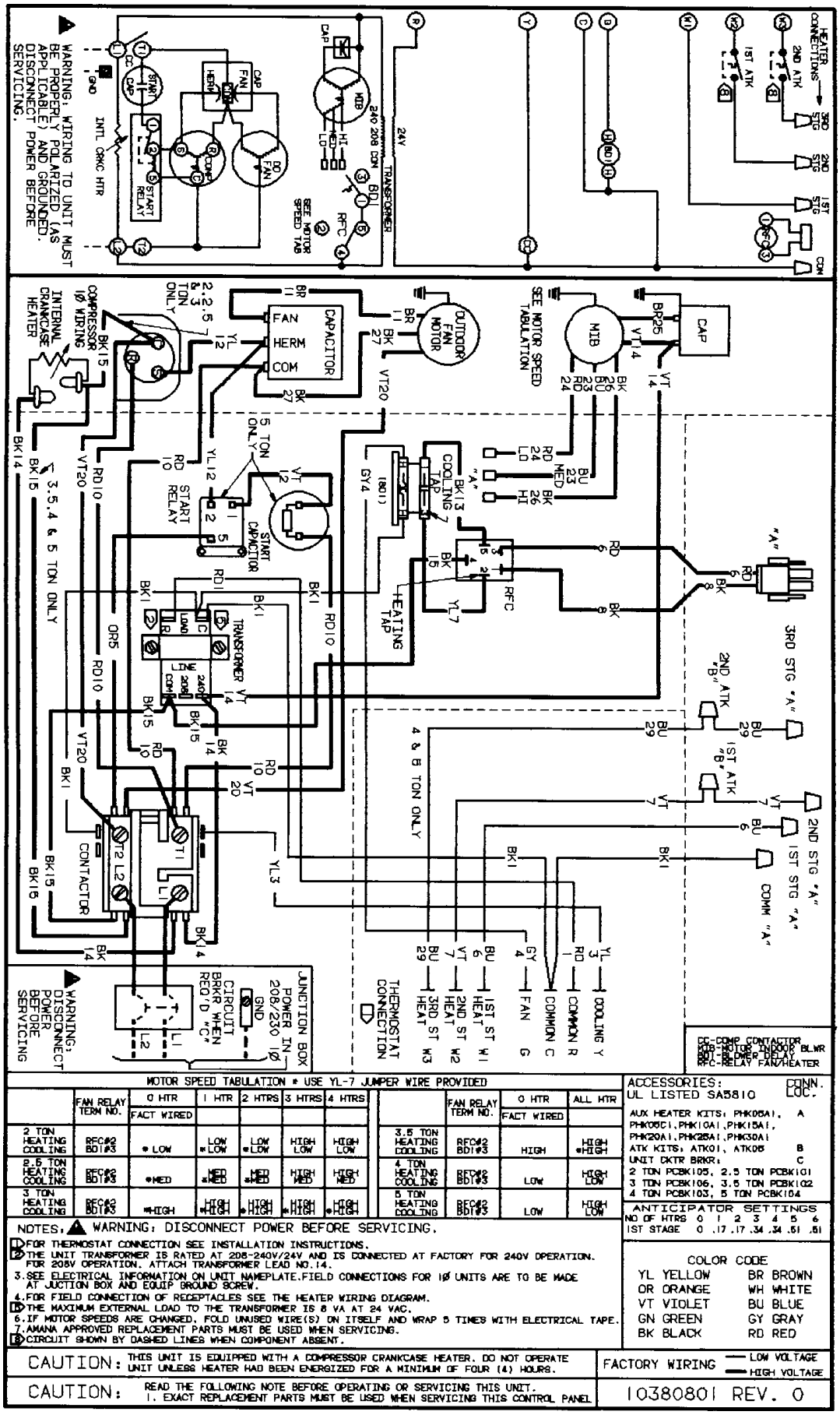
FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

D98623 REV 5

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

⚠ WARNING

WIRING DIAGRAMS



MOTOR SPEED TABULATION * USE YL-7 JUMPER WIRE PROVIDED

	FAN RELAY TERM NO.	0 HTR FACT WIRED	1 HTR	2 HTRS	3 HTRS	4 HTRS		FAN RELAY TERM NO.	0 HTR FACT WIRED	ALL HTR
2 TON HEATING COOLING	RFC#2 BDI#3	* LOW	*LOW	*LOW	HIGH LOW	HIGH LOW	3.5 TON HEATING COOLING	RFC#2 BDI#3	HIGH	HIGH *HIGH
2.5 TON HEATING COOLING	RFC#2 BDI#3	*MED	*MED	*MED	HIGH MED	HIGH MED	4 TON HEATING COOLING	RFC#2 BDI#3	LOW	HIGH LOW
3 TON HEATING COOLING	RFC#2 BDI#3	*HIGH	*HIGH	*HIGH	*HIGH	*HIGH	5 TON HEATING COOLING	RFC#2 BDI#3	LOW	HIGH LOW

ACCESSORIES: UL LISTED SA5810 — CONN. LOC.

AUX HEATER KITS: PHK05A1, PHK08C1, PHK10A1, PHK15A1, PHK20A1, PHK25A1, PHK30A1 — A
ATK KITS: ATK01, ATK05 — B
UNIT DKTR BRKR: — C
2 TON PCBK105, 2.5 TON PCBK101
3 TON PCBK106, 3.5 TON PCBK102
4 TON PCBK103, 5 TON PCBK104

ANTICIPATOR SETTINGS

NO OF HTRS	0	1	2	3	4	5	6
1ST STAGE	0	.17	.17	.34	.34	.51	.51

NOTES: ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.

1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO.14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 1Ø UNITS ARE TO BE MADE AT JUCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
8. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.

COLOR CODE

YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.

FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

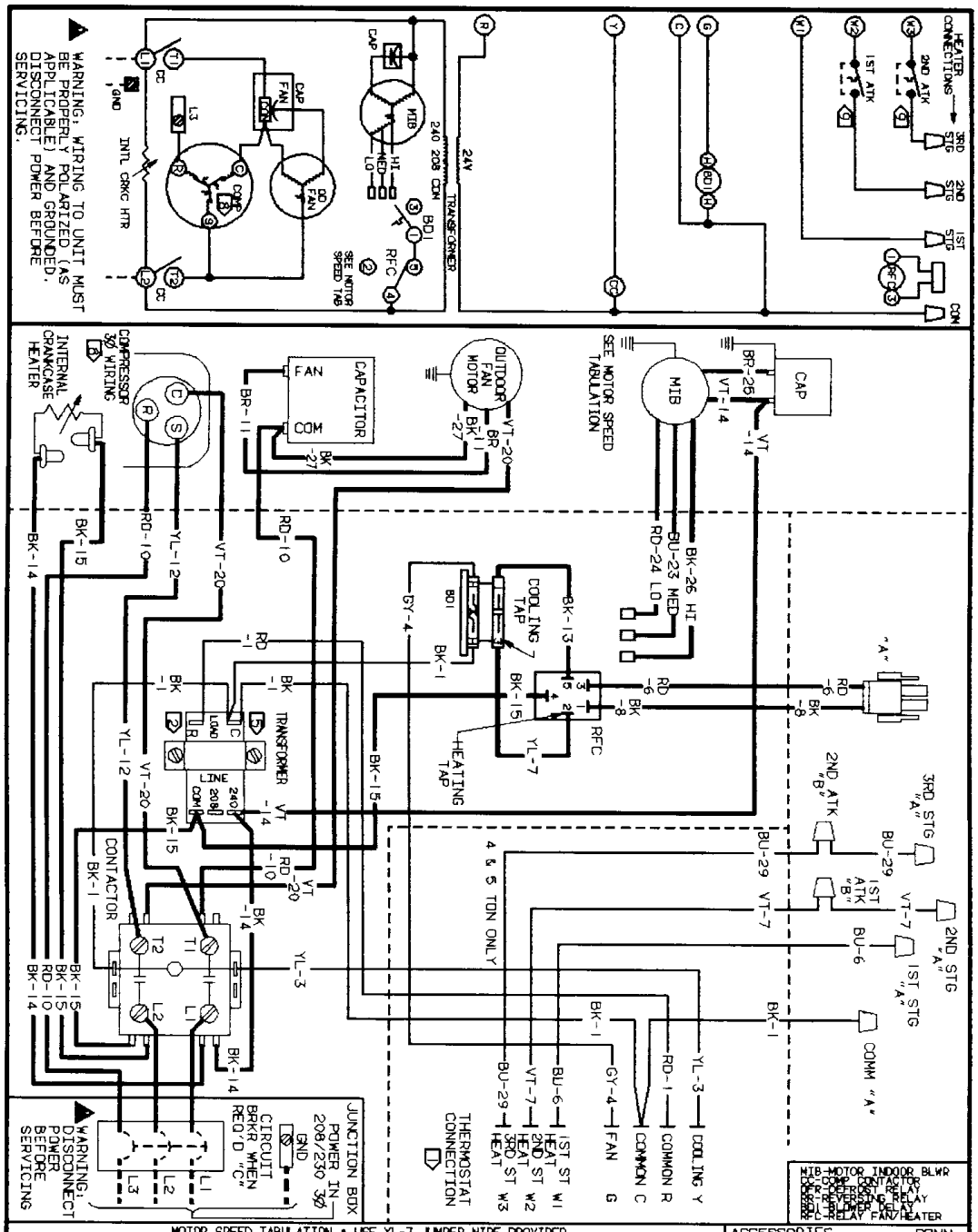
CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT.
1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL

10380801 REV. 0

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



MOTOR SPEED TABULATION • USE YL-7 JUMPER WIRE PROVIDED

	FAN RELAY TERM NO.	0 HTR	1 HTR	2 HTRS	3 HTRS	4 HTRS
		FACT WIRED				
3 TON HEATING COOLING	RFC#2 BDI#3	*HIGH	HIGH *HIGH	HIGH *HIGH	HIGH *HIGH	HIGH *HIGH

	FAN RELAY TERM NO.	0 HTR	ALL HTR
		FACT WIRED	
3.5 TON HEATING COOLING	RFC#2 BDI#3	HIGH	HIGH *HIGH
4 TON HEATING COOLING	RFC#2 BDI#3	LOW	HIGH LOW
5 TON HEATING COOLING	RFC#2 BDI#3	LOW	LOW

ANTICIPATOR SETTINGS

NO OF HTRS	0	1	2	3	4
1ST STAGE	0	.17	.17	.34	.34

COLOR CODE

YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

NOTES: ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.

1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO. 14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 3Ø UNITS ARE TO BE MADE AT JUCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
8. ALTERNATE COMPRESSOR TERMINALS MAY BE LABELED AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY.
9. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.

CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT.
1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL

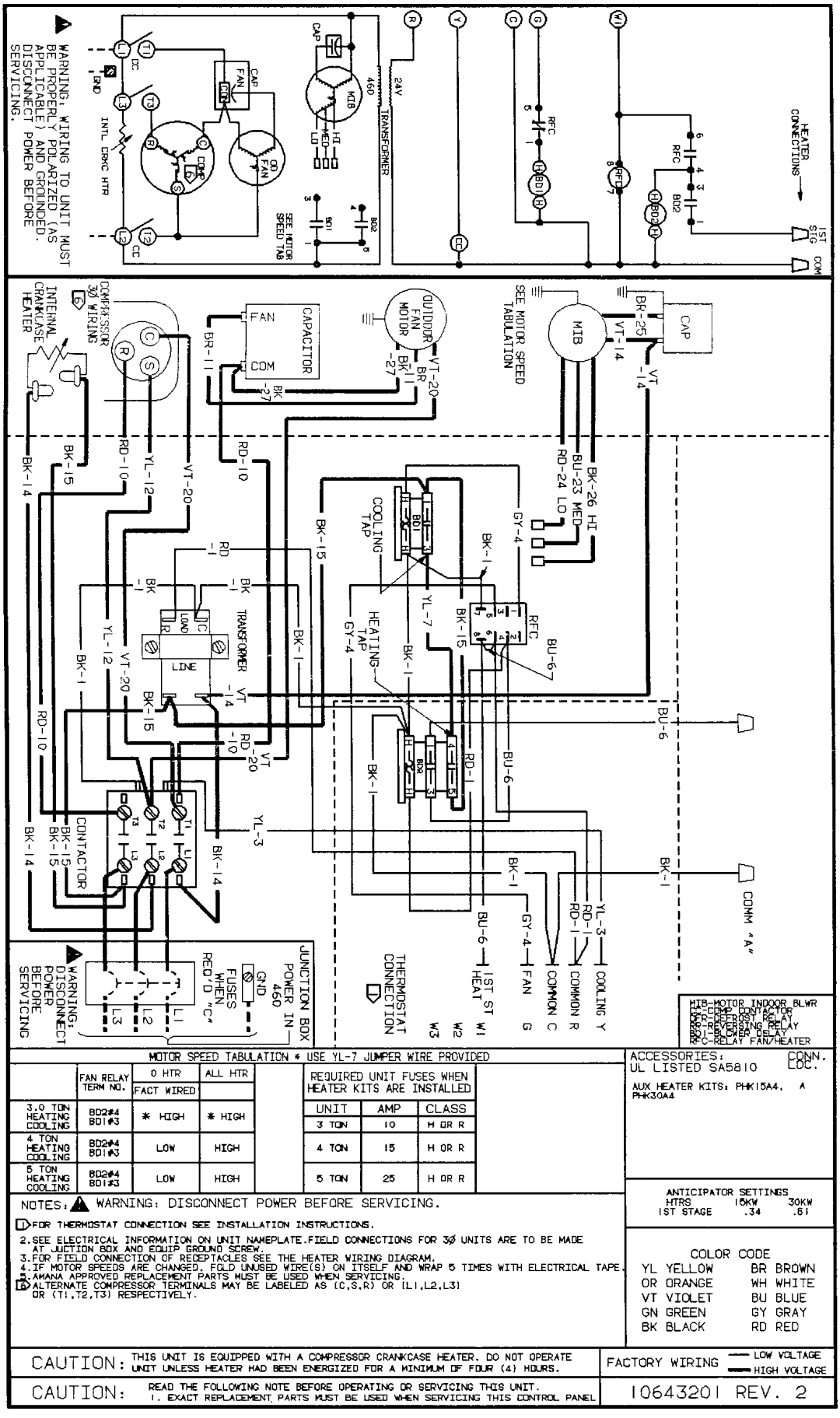
FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

10380701 REV. 0

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



MOTOR SPEED TABULATION * USE YL-7 JUMPER WIRE PROVIDED

	FAN RELAY TERM NO.	0 HTR FACT WIRED	ALL HTR
3.0 TON HEATING COOLING	BD2#4 BD1#3	* HIGH	* HIGH
4 TON HEATING COOLING	BD2#4 BD1#3	LOW	HIGH
5 TON HEATING COOLING	BD2#4 BD1#3	LOW	HIGH

REQUIRED UNIT FUSES WHEN HEATER KITS ARE INSTALLED

UNIT	AMP	CLASS
3 TON	10	H OR R
4 TON	15	H OR R
5 TON	25	H OR R

ACCESSORIES: UL LISTED SA5810 — CONN. LOC.

AUX HEATER KITS: PHK15A4, A PHK30A4

ANTICIPATOR SETTINGS

	15KW	30KW
1ST STAGE	.34	.61

NOTES: ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.

1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 3Ø UNITS ARE TO BE MADE AT JUCTION BOX AND EQUIP GROUND SCREW.
3. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
4. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
5. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
6. ALTERNATE COMPRESSOR TERMINALS MAY BE LABELED AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY.

COLOR CODE

YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT.
1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL

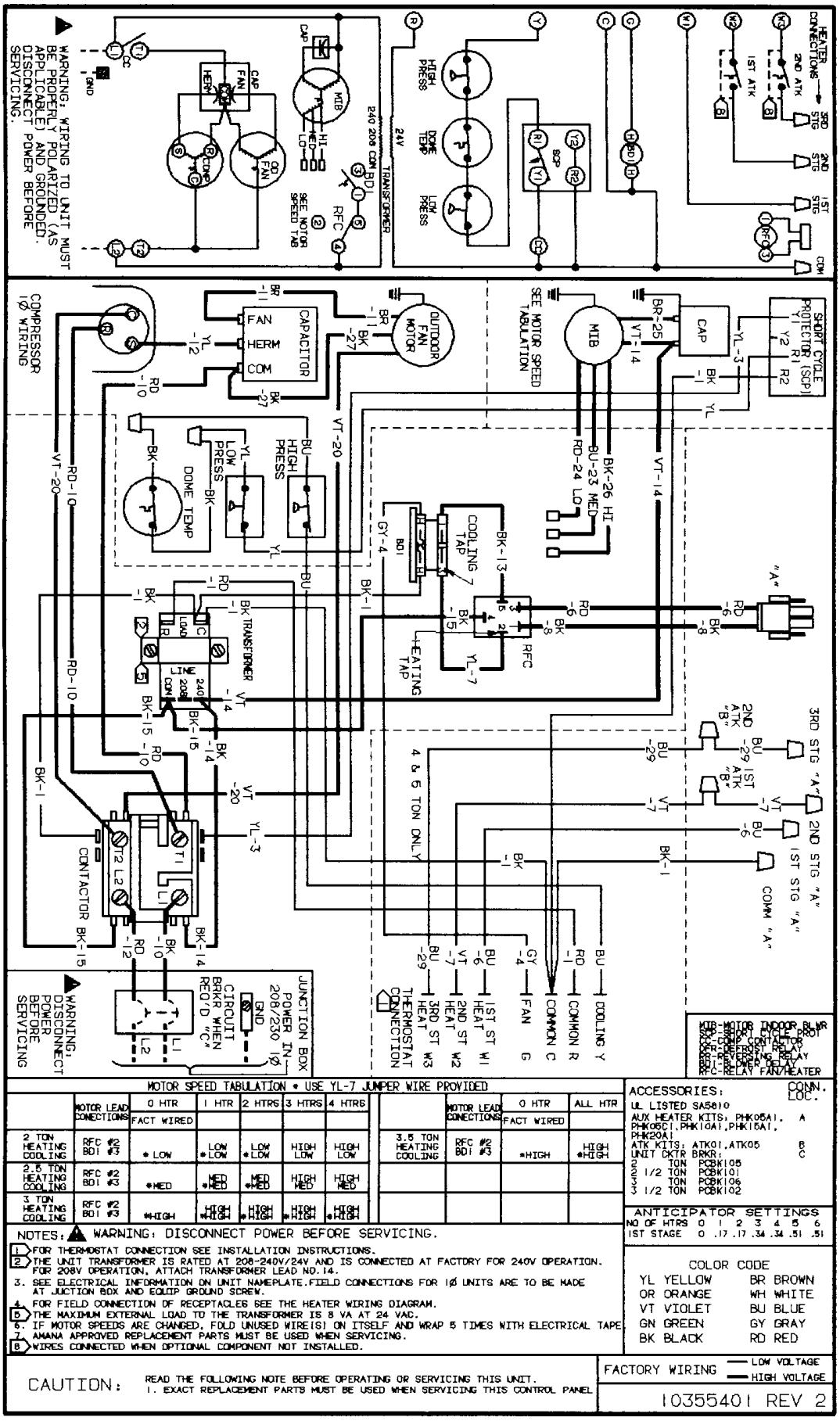
FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

10643201 REV. 2

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



MOTOR SPEED TABULATION * USE YL-7 JUMPER WIRE PROVIDED

	MOTOR LEAD CONNECTIONS	0 HTR FACT WIRED	1 HTR	2 HTRS	3 HTRS	4 HTRS		MOTOR LEAD CONNECTIONS	0 HTR FACT WIRED	ALL HTR
2 TON HEATING COOLING	RFC #2 BDI #3	* LOW	LOW * LOW	LOW * LOW	HIGH LOW	HIGH LOW	3.5 TON HEATING COOLING	RFC #2 BDI #3	*HIGH	HIGH *HIGH
2.5 TON HEATING COOLING	RFC #2 BDI #3	*MED	MED *MED	MED *MED	HIGH MED	HIGH MED				
3 TON HEATING COOLING	RFC #2 BDI #3	*HIGH	HIGH *HIGH	HIGH *HIGH	HIGH *HIGH	HIGH *HIGH				

ACCESSORIES: CONN. LOC.
UL LISTED SA5810
AUX HEATER KITS: PHK05A1, PHK06D1, PHK10A1, PHK15A1, PHK20A1 — A
ATK KITS: ATK01, ATK05 — B
UNIT CKTR BRKR: — C
2 TON PCBK105
2 1/2 TON PCBK101
3 TON PCBK106
3 1/2 TON PCBK102

ANTICIPATOR SETTINGS

NO OF HTRS	0	1	2	3	4	5	6
1ST STAGE	0	.17	.17	.34	.34	.51	.51

NOTES: ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.
1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO.14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 1Ø UNITS ARE TO BE MADE AT JUCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
8. WIRES CONNECTED WHEN OPTIONAL COMPONENT NOT INSTALLED.

COLOR CODE

YL	YELLOW	BR	BROWN
OR	ORANGE	WH	WHITE
VT	VIOLET	BU	BLUE
GN	GREEN	GY	GRAY
BK	BLACK	RD	RED

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT.
1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL

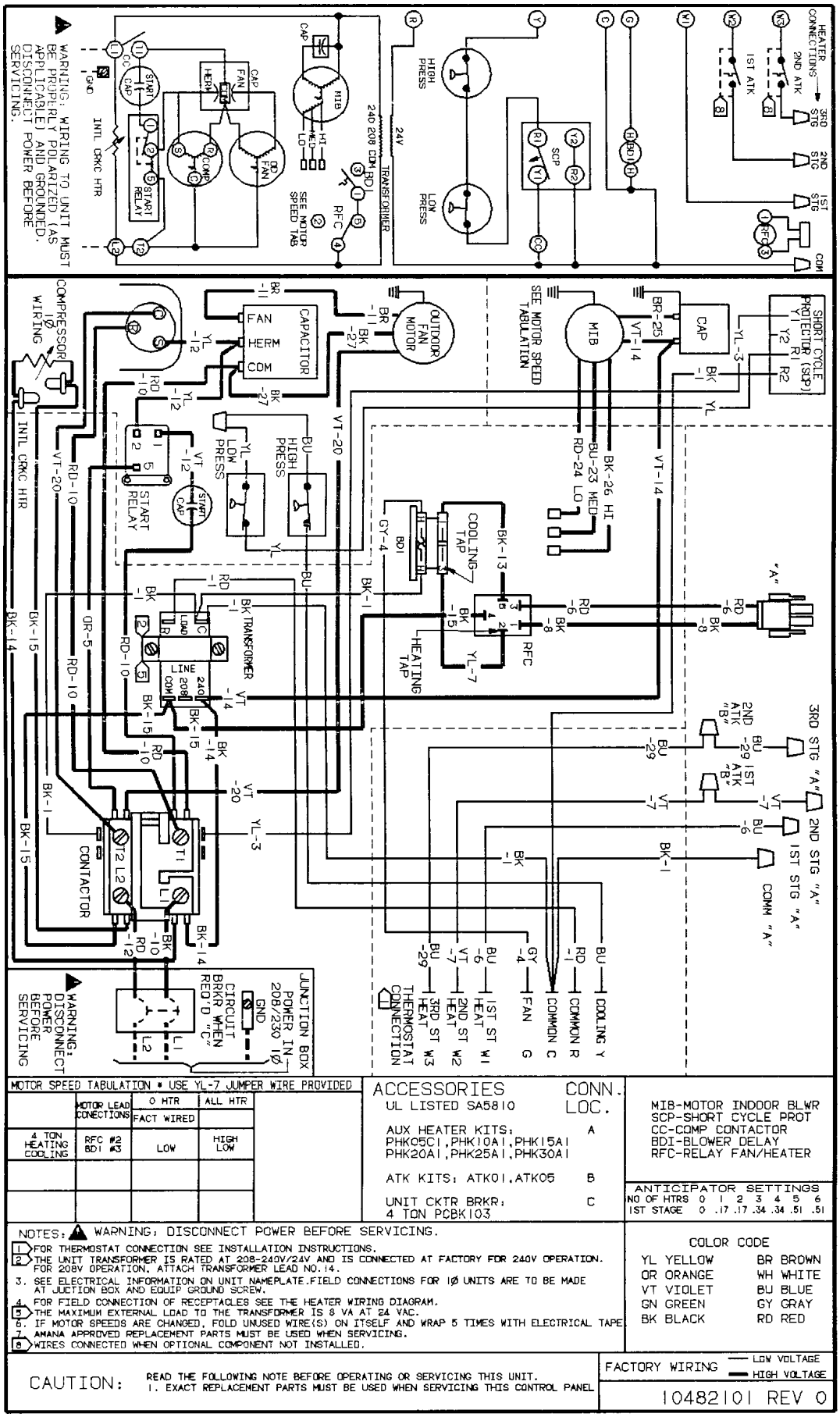
FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

10355401 REV 2

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



MOTOR SPEED TABULATION * USE YL-7 JUMPER WIRE PROVIDED			
	MOTOR LEAD CONECTIONS	0 HTR	ALL HTR
		FACT WIRED	
4 TON HEATING COOLING	RFC #2 BDI #3	LOW	HIGH LOW

ACCESSORIES — UL LISTED SA5810 — CONN. LOC.

AUX HEATER KITS: PHK05C1, PHK10A1, PHK15A1, PHK20A1, PHK25A1, PHK30A1 — A

ATK KITS: ATK01, ATK05 — B

UNIT CKTR BRKR: 4 TON PCBK103 — C

MIB-MOTOR INDOOR BLWR
SCP-SHORT CYCLE PROT
CC-COMP CONTACTOR
BDI-BLOWER DELAY
RFC-RELAY FAN/HEATER

ANTICIPATOR SETTINGS							
NO OF HTRS	0	1	2	3	4	5	6
1ST STAGE	0	.17	.17	.34	.34	.51	.51

NOTES: ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.

1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO.14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR Ø UNITS ARE TO BE MADE AT JUCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
8. WIRES CONNECTED WHEN OPTIONAL COMPONENT NOT INSTALLED.

COLOR CODE	
YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT.
1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL

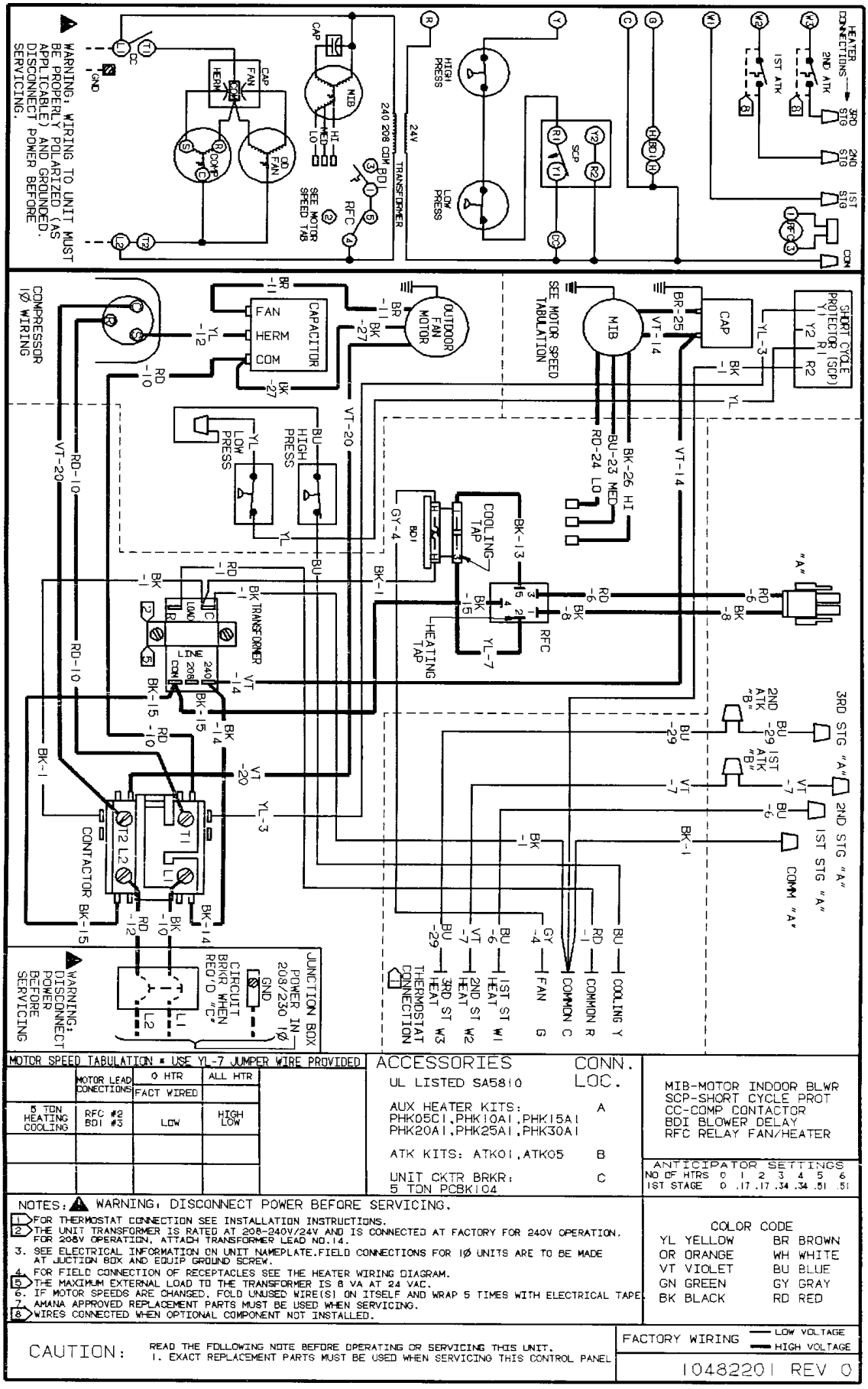
FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

10482101 REV 0

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



MOTOR SPEED TABULATION * USE YL-7 JUMPER WIRE PROVIDED

	MOTOR LEAD CONECTIONS	0 HTR	ALL HTR
		FACT WIRED	
5 TON HEATING COOLING	RFC #2 BDI #3	LOW	HIGH LOW

ACCESSORIES — CONN. LOC.

UL LISTED SA5810

AUX HEATER KITS: PHK05CI,PHK10AI,PHK15AI PHK20AI,PHK25AI,PHK30AI — A

ATK KITS: ATK01,ATK05 — B

UNIT CKTR BRKR: 5 TON PCBK104 — C

MIB-MOTOR INDOOR BLWR
SCP-SHORT CYCLE PROT
CC-COMP CONTACTOR
BDI BLOWER DELAY
RFC RELAY FAN/HEATER

ANTICIPATOR SETTINGS

NO OF HTRS	0	1	2	3	4	5	6
1ST STAGE	0	.17	.17	.34	.34	.51	.51

NOTES: ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.

1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO.14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 1Ø UNITS ARE TO BE MADE AT JUCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
8. WIRES CONNECTED WHEN OPTIONAL COMPONENT NOT INSTALLED.

COLOR CODE

YL	YELLOW	BR	BROWN
OR	ORANGE	WH	WHITE
VT	VIOLET	BU	BLUE
GN	GREEN	GY	GRAY
BK	BLACK	RD	RED

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT.
1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL

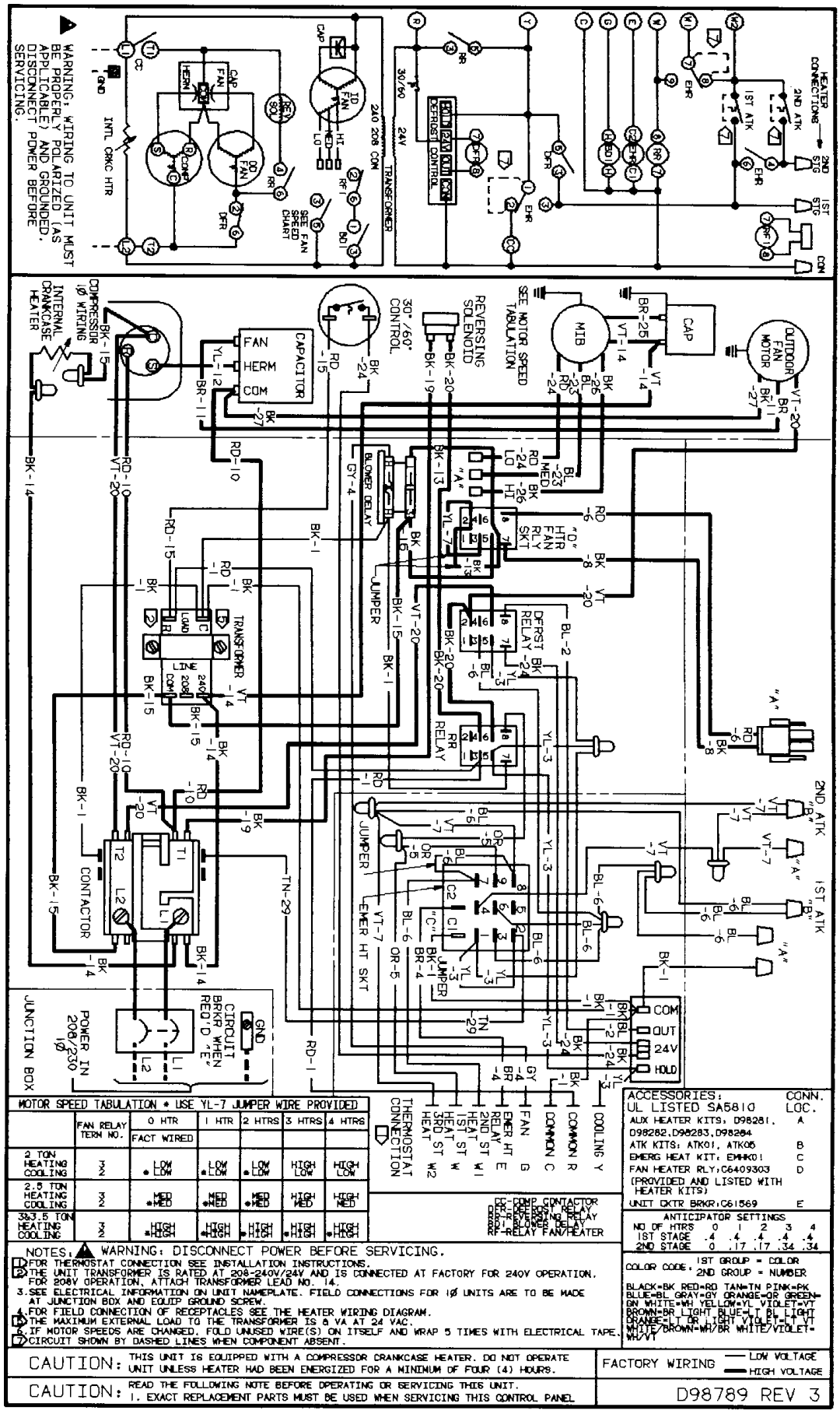
FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

10482201 REV 0

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



MOTOR SPEED TABULATION • USE YL-7 JUMPER WIRE PROVIDED						
	FAN RELAY TERM NO.	0 HTR	1 HTR	2 HTRS	3 HTRS	4 HTRS
		FACT WIRED				
2 TON HEATING COOLING	2 4	• LOW LOW	LOW • LOW	LOW LOW	HIGH LOW	HIGH LOW
2.5 TON HEATING COOLING	2 4	• MED	MED • MED	MED MED	HIGH MED	HIGH MED
3&3.5 TON HEATING COOLING	2 4	HIGH • HIGH	HIGH • HIGH	HIGH HIGH	HIGH HIGH	HIGH HIGH

ACCESSORIES: UL LISTED SA5810	CONN. LOC.
AUX HEATER KITS: D98281, D98282, D98283, D98284	A
ATK KITS: ATK01, ATK05	B
EMERG HEAT KIT: EMHK01	C
FAN HEATER RLY: C6409303 (PROVIDED AND LISTED WITH HEATER KITS)	D
UNIT DKTR BRKR: C61569	E

ANTICIPATOR SETTINGS					
NO OF HTRS	0	1	2	3	4
1ST STAGE	.4	.4	.4	.4	.4
2ND STAGE	0	.17	.17	.34	.34

COLOR CODE: 1ST GROUP = COLOR, 2ND GROUP = NUMBER

BLACK=BK RED=RD TAN=TN PINK=PK BLUE=BL GRAY=GY ORANGE=OR GREEN=GN WHITE=WH YELLOW=YL VIOLET=VT BROWN=BR LIGHT BLUE=LT BL LIGHT ORANGE=LT OR LIGHT VIOLET=LT VT WHITE/BROWN=WH/BR WHITE/VIOLET=WH/VT

CC-COMP CONTACTOR
DFR-DEFROST RELAY
REV-REVERSING RELAY
BDR-BLOWER DELAY
RF-RELAY FAN/HEATER

NOTES:
⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.
1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO. 14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR Ø UNITS ARE TO BE MADE AT JUNCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.

CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT. 1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL

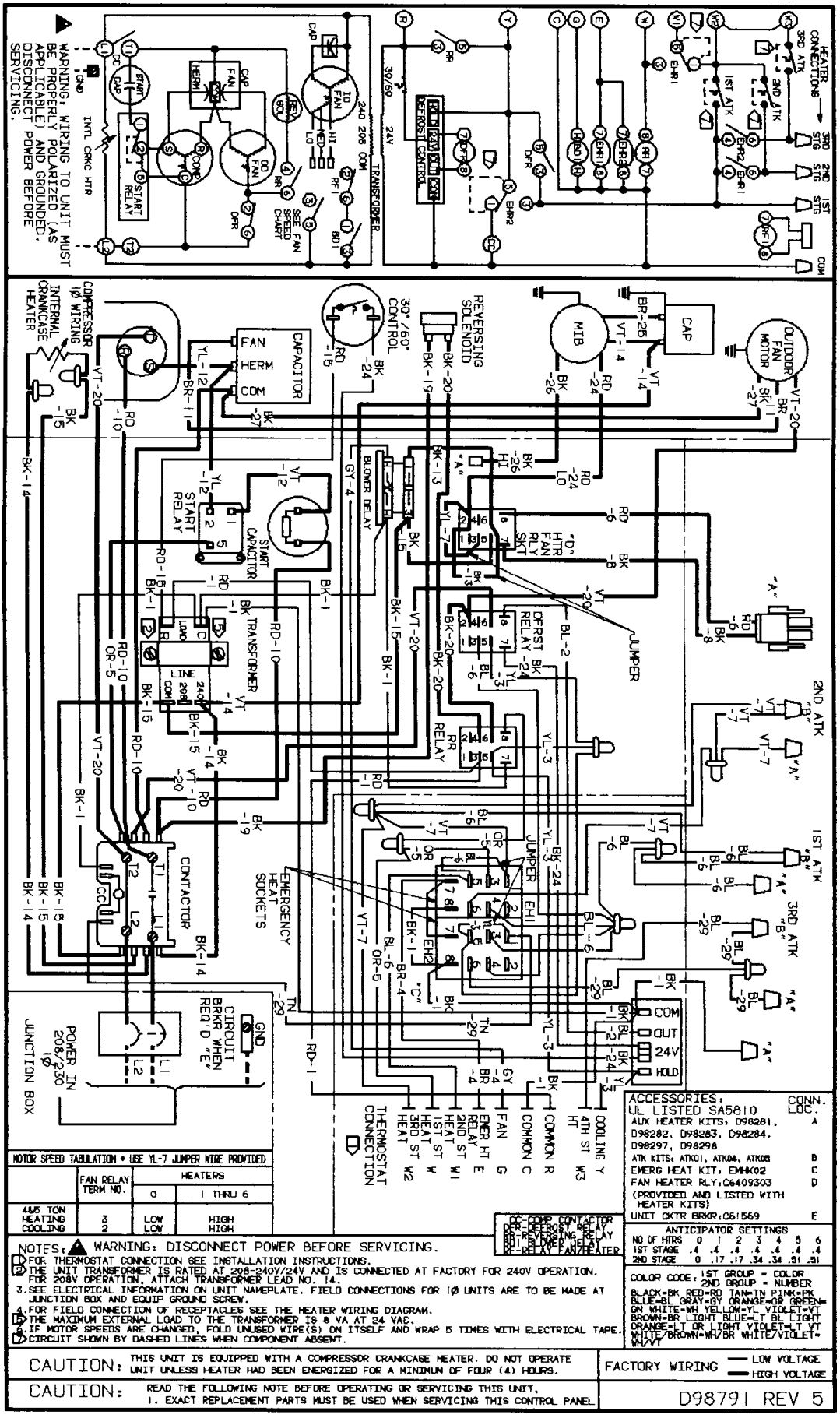
FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

D98789 REV 3

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

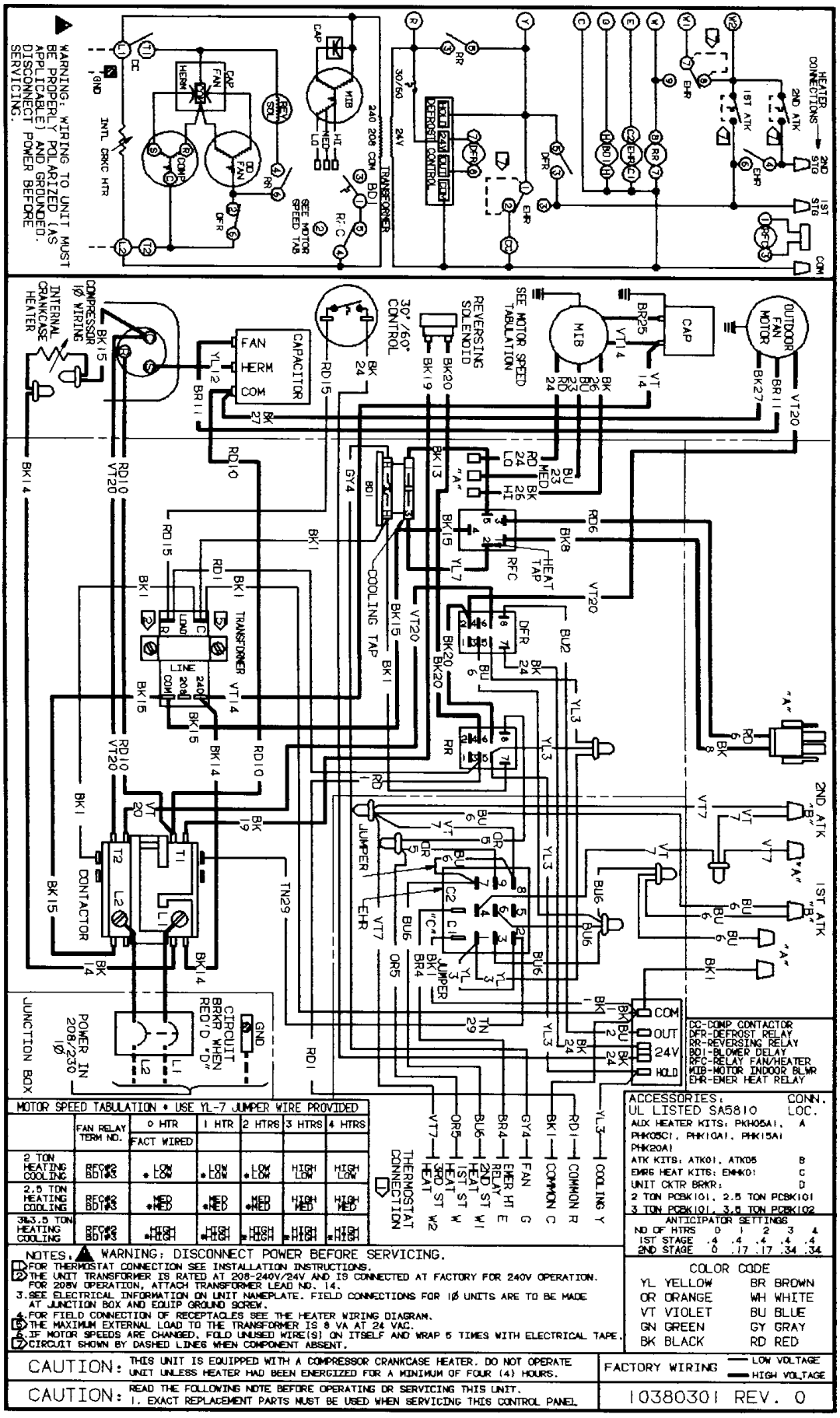
WIRING DIAGRAMS


WARNING: WIRING TO UNIT MUST BE PROPERLY POLARIZED (AS APPLICABLE) AND GROUNDED. DISCONNECT POWER BEFORE SERVICING.
INTL CRKC HTR
START CAP
START RELAY
FAN HERM
CAP
DD FAN
SEE FAN SPEED CHART
240 208 COM
HI MED LO
TRANSFORMER
DEFROST CONTROL
DFR
HEATER CONNECTIONS
3RD STG
2ND STG
1ST STG
1ST ATK
2ND ATK
3RD ATK
COMPRESSOR Ø WIRING
INTERNAL CRANKCASE HEATER
FAN HERM COM
CAPACITOR
30°/60° CONTROL
REVERSING SOLENOID
MTR
CAP
OUTDOOR FAN MOTOR
BLOWER DELAY
"A"
"D" HTR FAN RLY SKT
START CAPACITOR
START RELAY
LINE 208 240 COM
TRANSFORMER
DFRST RELAY
JUMPER
RR RELAY
2ND ATK "B"
1ST ATK "B"
3RD ATK "B"
CONTACTOR
EMERGENCY HEAT SOCKETS
EH1
EH2
"C"
COM
OUT
24V
HOLD
CIRCUIT BRKR WHEN REQ'D "E"
GND
POWER IN 208/230 1Ø
JUNCTION BOX
THERMOSTAT CONNECTION
4TH ST HT
COOLING Y
COMMON R
COMMON C
FAN G
EMER HT E
2ND ST W1
1ST ST W
HEAT 3RD ST W2
HEAT
ACCESSORIES:
UL LISTED SA5810
AUX HEATER KITS: D98281, D98282, D98283, D98284, D98297, D98298
ATK KITS: ATK01, ATK04, ATK02
EMERG HEAT KIT, EMHK02
FAN HEATER RLY:C6409303
(PROVIDED AND LISTED WITH HEATER KITS)
UNIT CKTR BRKR:C61569
CONN. LOC.
ANTICIPATOR SETTINGS
NO OF HTRS 0 1 2 3 4 5 6
1ST STAGE .4 .4 .4 .4 .4 .4 .4
2ND STAGE 0 .17 .17 .34 .34 .51 .51
COLOR CODE: 1ST GROUP = COLOR 2ND GROUP = NUMBER
BLACK=BK RED=RD TAN=TN PINK=PK BLUE=BL GRAY=GY ORANGE=OR GREEN=GN WHITE=WH YELLOW=YL VIOLET=VT BROWN=BR LIGHT BLUE=LT BL LIGHT ORANGE=LT OR LIGHT VIOLET=LT VT WHITE/BROWN=WH/BR WHITE/VIOLET=WH/VT
MOTOR SPEED TABULATION • USE YL-7 JUMPER WIRE PROVIDED
FAN RELAY TERM NO.
HEATERS
0
1 THRU 6
4&5 TON HEATING COOLING
3 2
LOW LOW
HIGH HIGH
NOTES:
WARNING: DISCONNECT POWER BEFORE SERVICING.
1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO. 14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR Ø UNITS ARE TO BE MADE AT JUNCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.
CC-COMP CONTACTOR
DR-DEFROST RELAY
RR-REVERSING RELAY
BD-BLOWER RELAY
FR-RELAY FAN/HEATER
CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.
CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT. 1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL
FACTORY WIRING
LOW VOLTAGE
HIGH VOLTAGE
D98791 REV 5

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



MOTOR SPEED TABULATION • USE YL-7 JUMPER WIRE PROVIDED

	FAN RELAY TERM NO.	0 HTR FACT WIRED	1 HTR	2 HTRS	3 HTRS	4 HTRS
2 TON HEATING COOLING	BEC#2 BDI#3	• LOW	• LOW LOW	• LOW LOW	HIGH LOW	HIGH LOW
2.5 TON HEATING COOLING	BEC#2 BDI#3	MED • MED	• MED MED	• MED MED	HIGH MED	HIGH MED
3&3.5 TON HEATING COOLING	BEC#2 BDI#3	HIGH • HIGH	• HIGH HIGH	• HIGH HIGH	• HIGH HIGH	• HIGH HIGH

ACCESSORIES: UL LISTED SA5810

	CONN. LOC.
AUX HEATER KITS: PKH05A1, PHK05C1, PHK10A1, PHK15A1 PHK20A1	A
ATK KITS: ATK01, ATK05	B
EMRG HEAT KITS: EMHK01	C
UNIT CKTR BRKR:	D
2 TON PCBK101, 2.5 TON PCBK101 3 TON PCBK101, 3.5 TON PCBK102	

ANTICIPATOR SETTINGS

NO OF HTRS	0	1	2	3	4
1ST STAGE	.4	.4	.4	.4	.4
2ND STAGE	0	.17	.17	.34	.34

NOTES. ⚠ WARNING: DISCONNECT POWER BEFORE SERVICING.
1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO. 14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 1Ø UNITS ARE TO BE MADE AT JUNCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.

COLOR CODE

YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.

CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT. 1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL

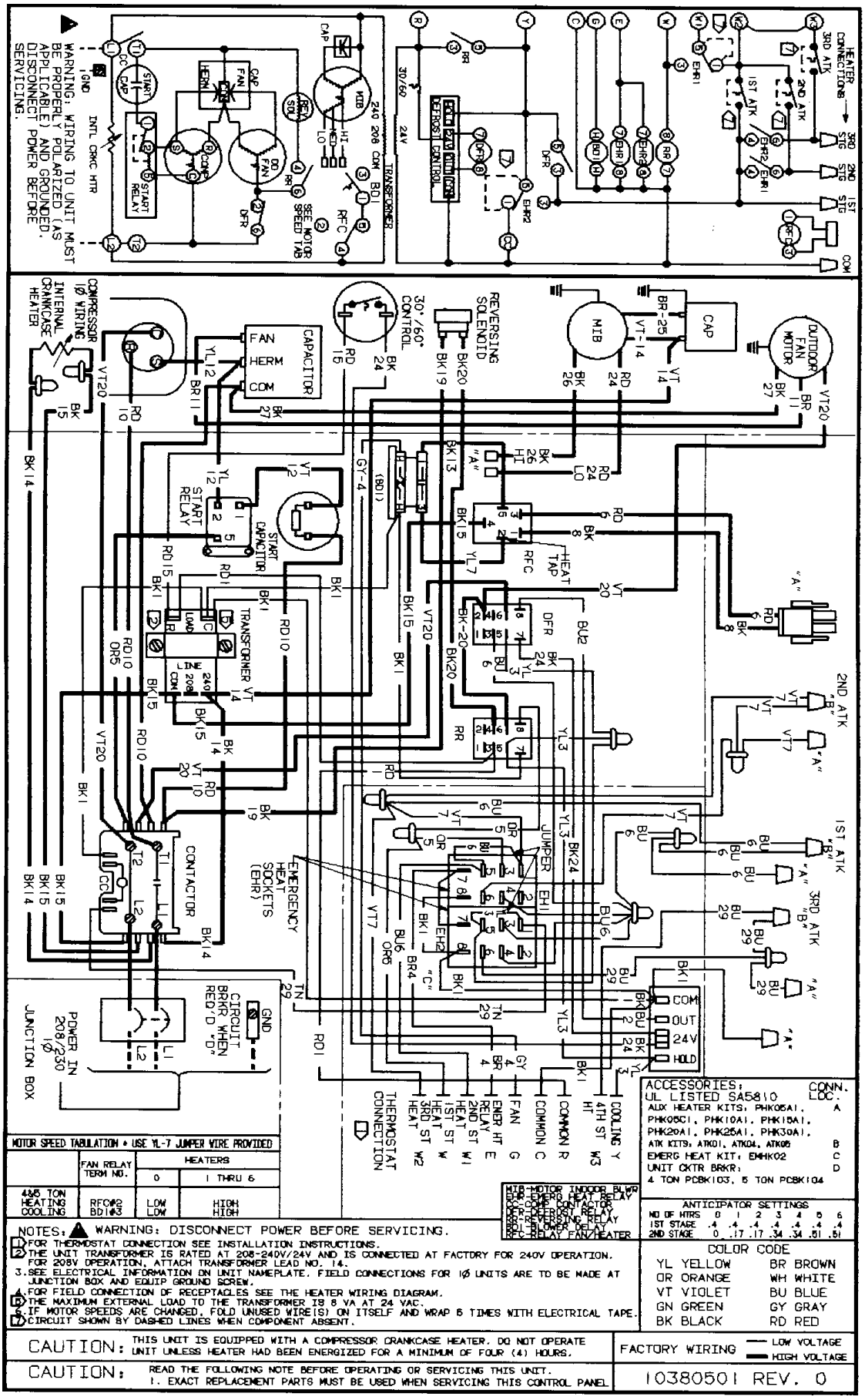
FACTORY WIRING — LOW VOLTAGE — HIGH VOLTAGE

10380301 REV. 0

⚠ WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

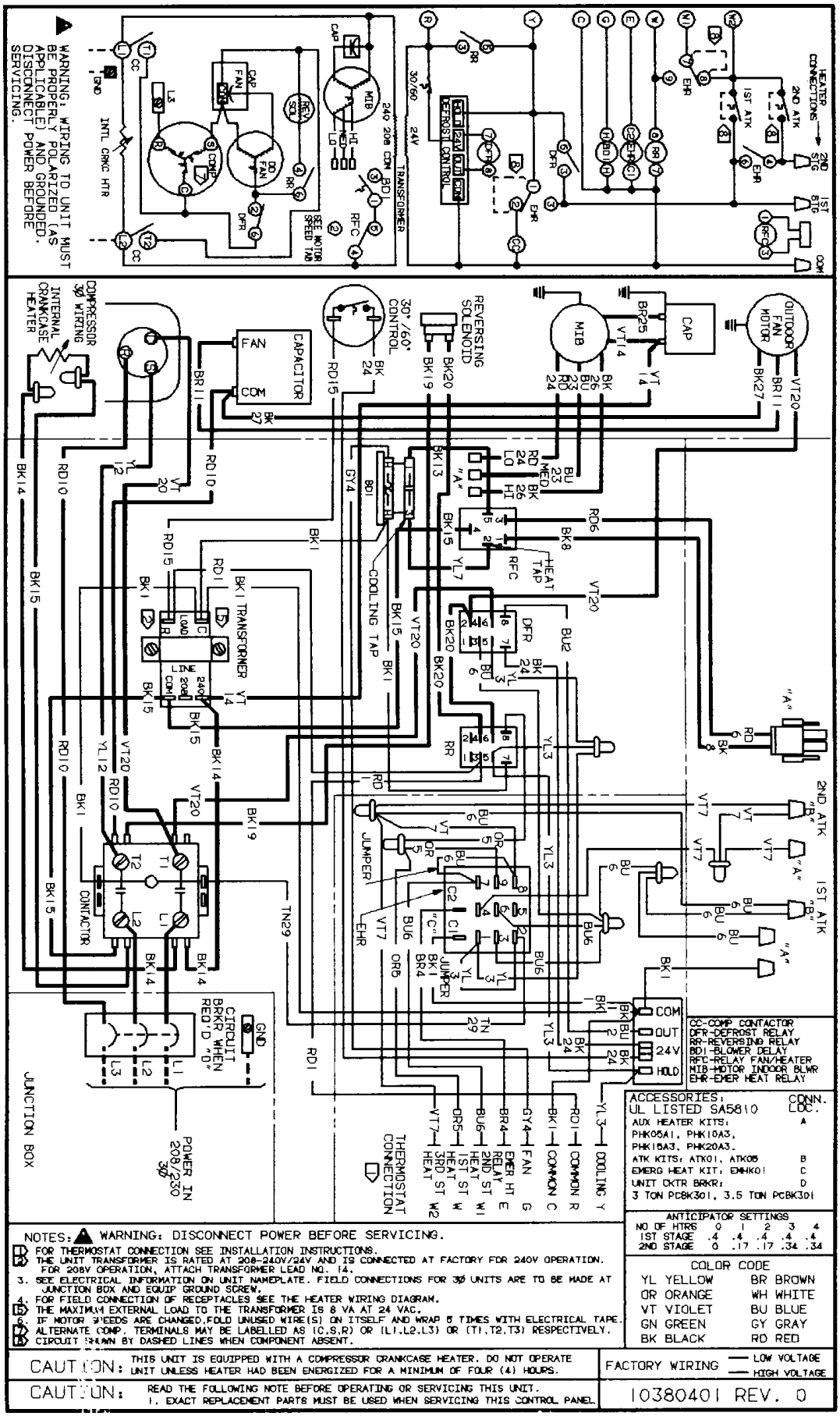
WIRING DIAGRAMS


WARNING: WIRING TO UNIT MUST BE PROPERLY POLARIZED (AS APPLICABLE) AND GROUNDED. DISCONNECT POWER BEFORE SERVICING.
COMPRESSOR 1Ø WIRING
INTERNAL CRANKCASE HEATER
30°/60° CONTROL
REVERSING SOLENOID
MIB
CAP
OUTDOOR FAN MOTOR
CAPACITOR
START RELAY
START CAPACITOR
TRANSFORMER
CONTACTOR
EMERGENCY HEAT SOCKETS (EHR)
JUMPER
HEAT TAP
JUNCTION BOX
POWER IN 208/230 1Ø
CIRCUIT BRKR WHEN REQ'D "D"
THERMOSTAT CONNECTION
HEATER CONNECTIONS
3RD ATK
2ND ATK
1ST ATK
3RD STG
2ND STG
1ST STG
COM
ACCESSORIES; UL LISTED SA5810
AUX HEATER KITS; PHK05A1, PHK05C1, PHK10A1, PHK15A1, PHK20A1, PHK25A1, PHK30A1.
ATK KITS; ATK01, ATK04, ATK05
EMERG HEAT KIT; EMHK02
UNIT CKTR BRKR;
4 TON PCBK103, 5 TON PCBK104
CONN. LOC.
MOTOR SPEED TABULATION • USE YL-7 JUMPER WIRE PROVIDED
FAN RELAY TERM NO.
HEATERS
0
1 THRU 6
4&5 TON HEATING COOLING
RFC#2 BD1#3
LOW LOW
HIGH HIGH
ANTICIPATOR SETTINGS
NO OF HTRS 0 1 2 3 4 5 6
1ST STAGE .4 .4 .4 .4 .4 .4 .4
2ND STAGE 0 .17 .17 .34 .34 .51 .51
COLOR CODE
YL YELLOW
OR ORANGE
VT VIOLET
GN GREEN
BK BLACK
BR BROWN
WH WHITE
BU BLUE
GY GRAY
RD RED
NOTES: WARNING: DISCONNECT POWER BEFORE SERVICING.
1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO. 14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 1Ø UNITS ARE TO BE MADE AT JUNCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.
MTR-MOTOR INDOOR BLWR
EHR-EMERG HEAT RELAY
CC-COMP CONTACTOR
DFR-DEFROST RELAY
RR-REVERSING RELAY
BDI-BLOWER DELAY
RFC-RELAY FAN/HEATER
CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.
CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT. 1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL
FACTORY WIRING
LOW VOLTAGE
HIGH VOLTAGE
1038050I REV. 0

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WARNING

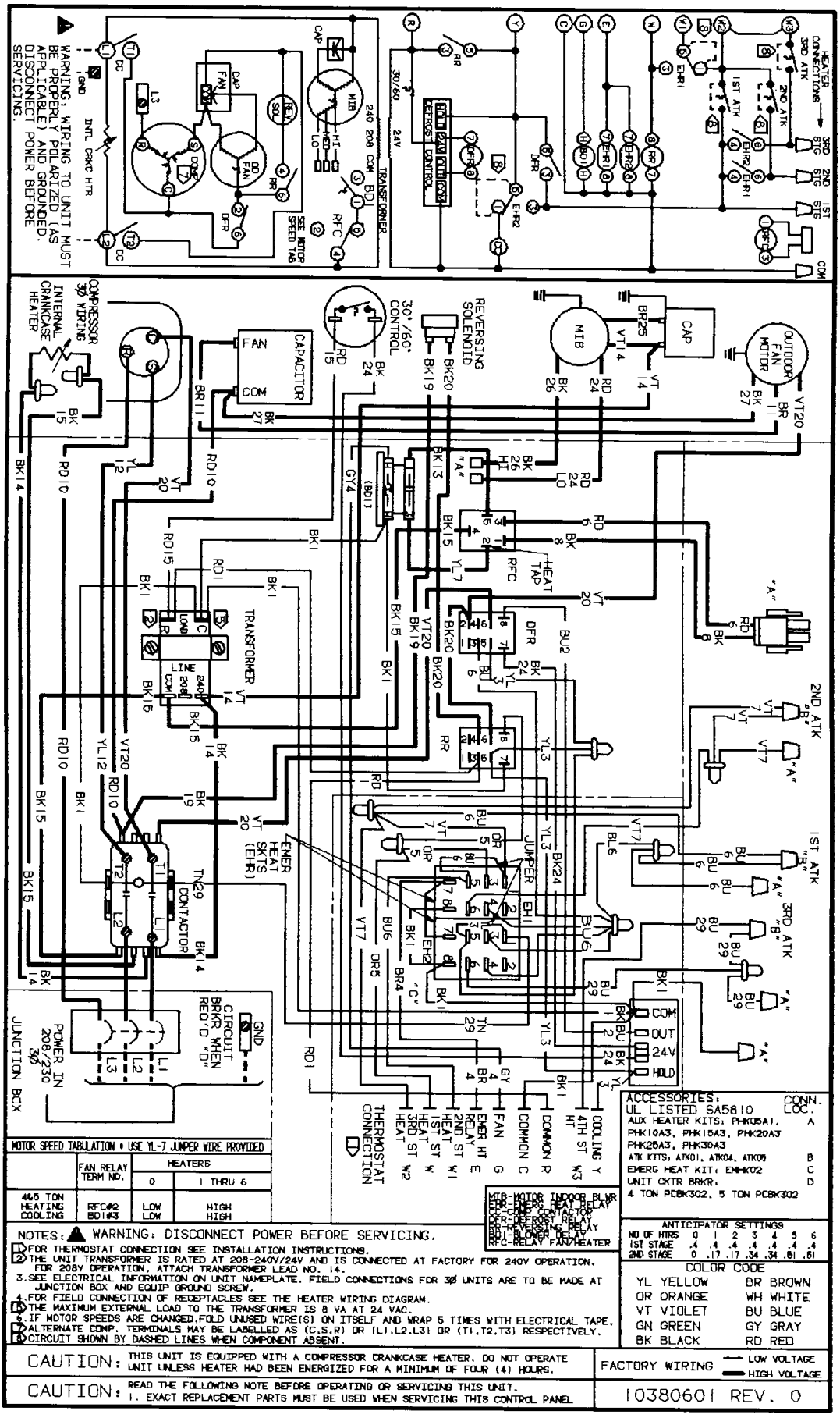
WIRING DIAGRAMS


WARNING: WIRING TO UNIT MUST BE PROPERLY POLARIZED (AS APPLICABLE) AND GROUNDED. DISCONNECT POWER BEFORE SERVICING.
HEATER CONNECTIONS
2ND ATK
1ST ATK
2ND STG
1ST STG
COM
INTL CRKC HTR
GND
CC
CAP
FAN
COM
DB FAN
RR
DFR
REV SOL
MTR
HI
MED
LO
240 208 COM
TRANSFORMER
SEE MOTOR SPEED TAB
RFC
30/60
24V
DEFROST CONTROL
EHR
COMPRESSOR 3Ø WIRING
INTERNAL CRANKCASE HEATER
CAPACITOR
30°/60° CONTROL
REVERSING SOLENOID
MIB
OUTDOOR FAN MOTOR
HEAT TAP
COOLING TAP
TRANSFORMER
LINE
LOAD
CONTACTOR
JUMPER
JUNCTION BOX
CIRCUIT BRKR WHEN REQ'D. "D"
POWER IN 208/230 3Ø
THERMOSTAT CONNECTION
CC-COMP CONTACTOR
DFR-DEFROST RELAY
RR-REVERSING RELAY
BDI-BLOWER DELAY
RFC-RELAY FAN/HEATER
MIB-MOTOR INDOOR BLWR
EHR-EMER HEAT RELAY
ACCESSORIES: UL LISTED SA5810
CONN. LOC.
AUX HEATER KITS: PHK05A1, PHK10A3, PHK15A3, PHK20A3.
ATK KITS: ATK01, ATK05
EMERG HEAT KIT: EMHK01
UNIT CKTR BRKR:
3 TON PCBK301, 3.5 TON PCBK301
ANTICIPATOR SETTINGS
NO OF HTRS 0 1 2 3 4
1ST STAGE .4 .4 .4 .4 .4
2ND STAGE 0 .17 .17 .34 .34
COLOR CODE
YL YELLOW
OR ORANGE
VT VIOLET
GN GREEN
BK BLACK
BR BROWN
WH WHITE
BU BLUE
GY GRAY
RD RED
NOTES: WARNING: DISCONNECT POWER BEFORE SERVICING.
1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO. 14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 3Ø UNITS ARE TO BE MADE AT JUNCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. ALTERNATE COMP. TERMINALS MAY BE LABELLED AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY.
8. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.
CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.
CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT. 1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL.
FACTORY WIRING
LOW VOLTAGE
HIGH VOLTAGE
1038040 REV. 0

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

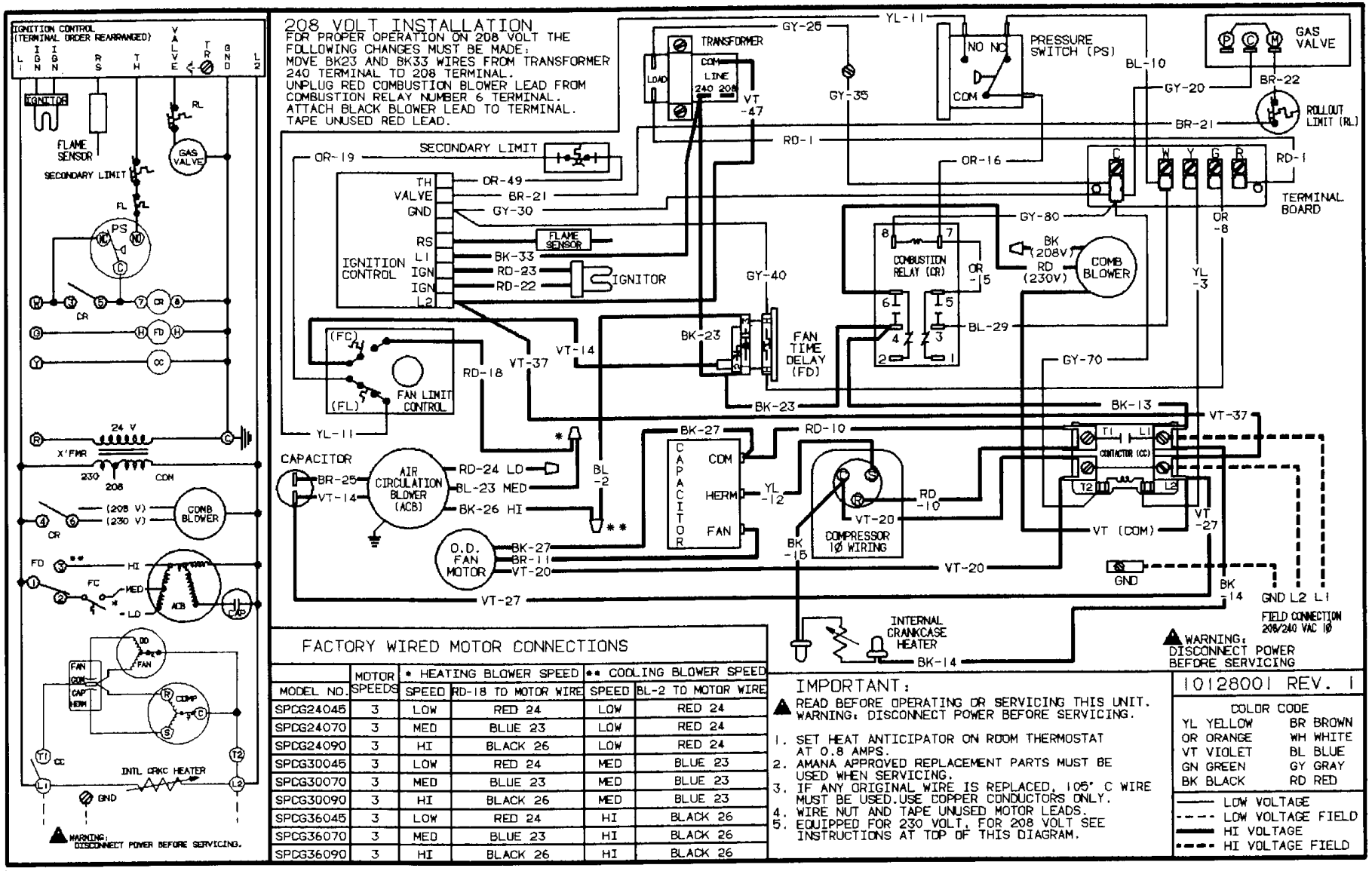
WIRING DIAGRAMS


WARNING: WIRING TO UNIT MUST BE PROPERLY POLARIZED (AS APPLICABLE) AND GROUNDED. DISCONNECT POWER BEFORE SERVICING.
COMPRESSOR 3Ø WIRING
INTERNAL CRANKCASE HEATER
FAN CAPACITOR COM
30'/60' CONTROL
REVERSING SOLENOID
MIB
CAP
OUTDOOR FAN MOTOR
TRANSFORMER
LINE 208 240
CONTACTOR
EMER HEAT SKTS (EHR)
JUMPER
1ST ATK "B"
2ND ATK "B"
3RD ATK "B"
THERMOSTAT CONNECTION
COM OUT 24V HOLD
POWER IN 208/230 3Ø
CIRCUIT BRKR WHEN REQ'D "D"
JUNCTION BOX
MOTOR SPEED TABULATION • USE YL-7 JUMPER WIRE PROVIDED
FAN RELAY TERM NO.
HEATERS
0
1 THRU 6
4&5 TON HEATING COOLING
RFC#2 BDI#3
LOW LOW
HIGH HIGH
ACCESSORIES: UL LISTED SA5810
CONN. LOC.
AUX HEATER KITS: PHK05A1, PHK10A3, PHK15A3, PHK20A3 PHK25A3, PHK30A3
ATK KITS: ATK01, ATK04, ATK05
EMERG HEAT KIT: EMHK02
UNIT CKTR BRKR: 4 TON PCBK302, 5 TON PCBK302
ANTICIPATOR SETTINGS
NO OF HTRS 0 1 2 3 4 5 6
1ST STAGE .4 .4 .4 .4 .4 .4 .4
2ND STAGE 0 .17 .17 .34 .34 .51 .51
COLOR CODE
YL YELLOW
OR ORANGE
VT VIOLET
GN GREEN
BK BLACK
BR BROWN
WH WHITE
BU BLUE
GY GRAY
RD RED
NOTES: WARNING: DISCONNECT POWER BEFORE SERVICING.
1. FOR THERMOSTAT CONNECTION SEE INSTALLATION INSTRUCTIONS.
2. THE UNIT TRANSFORMER IS RATED AT 208-240V/24V AND IS CONNECTED AT FACTORY FOR 240V OPERATION. FOR 208V OPERATION, ATTACH TRANSFORMER LEAD NO. 14.
3. SEE ELECTRICAL INFORMATION ON UNIT NAMEPLATE. FIELD CONNECTIONS FOR 3Ø UNITS ARE TO BE MADE AT JUNCTION BOX AND EQUIP GROUND SCREW.
4. FOR FIELD CONNECTION OF RECEPTACLES SEE THE HEATER WIRING DIAGRAM.
5. THE MAXIMUM EXTERNAL LOAD TO THE TRANSFORMER IS 8 VA AT 24 VAC.
6. IF MOTOR SPEEDS ARE CHANGED, FOLD UNUSED WIRE(S) ON ITSELF AND WRAP 5 TIMES WITH ELECTRICAL TAPE.
7. ALTERNATE COMP. TERMINALS MAY BE LABELLED AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY.
8. CIRCUIT SHOWN BY DASHED LINES WHEN COMPONENT ABSENT.
CAUTION: THIS UNIT IS EQUIPPED WITH A COMPRESSOR CRANKCASE HEATER. DO NOT OPERATE UNIT UNLESS HEATER HAD BEEN ENERGIZED FOR A MINIMUM OF FOUR (4) HOURS.
CAUTION: READ THE FOLLOWING NOTE BEFORE OPERATING OR SERVICING THIS UNIT. 1. EXACT REPLACEMENT PARTS MUST BE USED WHEN SERVICING THIS CONTROL PANEL
FACTORY WIRING
LOW VOLTAGE
HIGH VOLTAGE
10380601 REV. 0

WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BL-2 TO MOTOR WIRE
SPCG24045	3	LOW	RED 24	LOW	RED 24
SPCG24070	3	MED	BLUE 23	LOW	RED 24
SPCG24090	3	HI	BLACK 26	LOW	RED 24
SPCG30045	3	LOW	RED 24	MED	BLUE 23
SPCG30070	3	MED	BLUE 23	MED	BLUE 23
SPCG30090	3	HI	BLACK 26	MED	BLUE 23
SPCG36045	3	LOW	RED 24	HI	BLACK 26
SPCG36070	3	MED	BLUE 23	HI	BLACK 26
SPCG36090	3	HI	BLACK 26	HI	BLACK 26

IMPORTANT:

WARNING: READ BEFORE OPERATING OR SERVICING THIS UNIT. WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT. FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

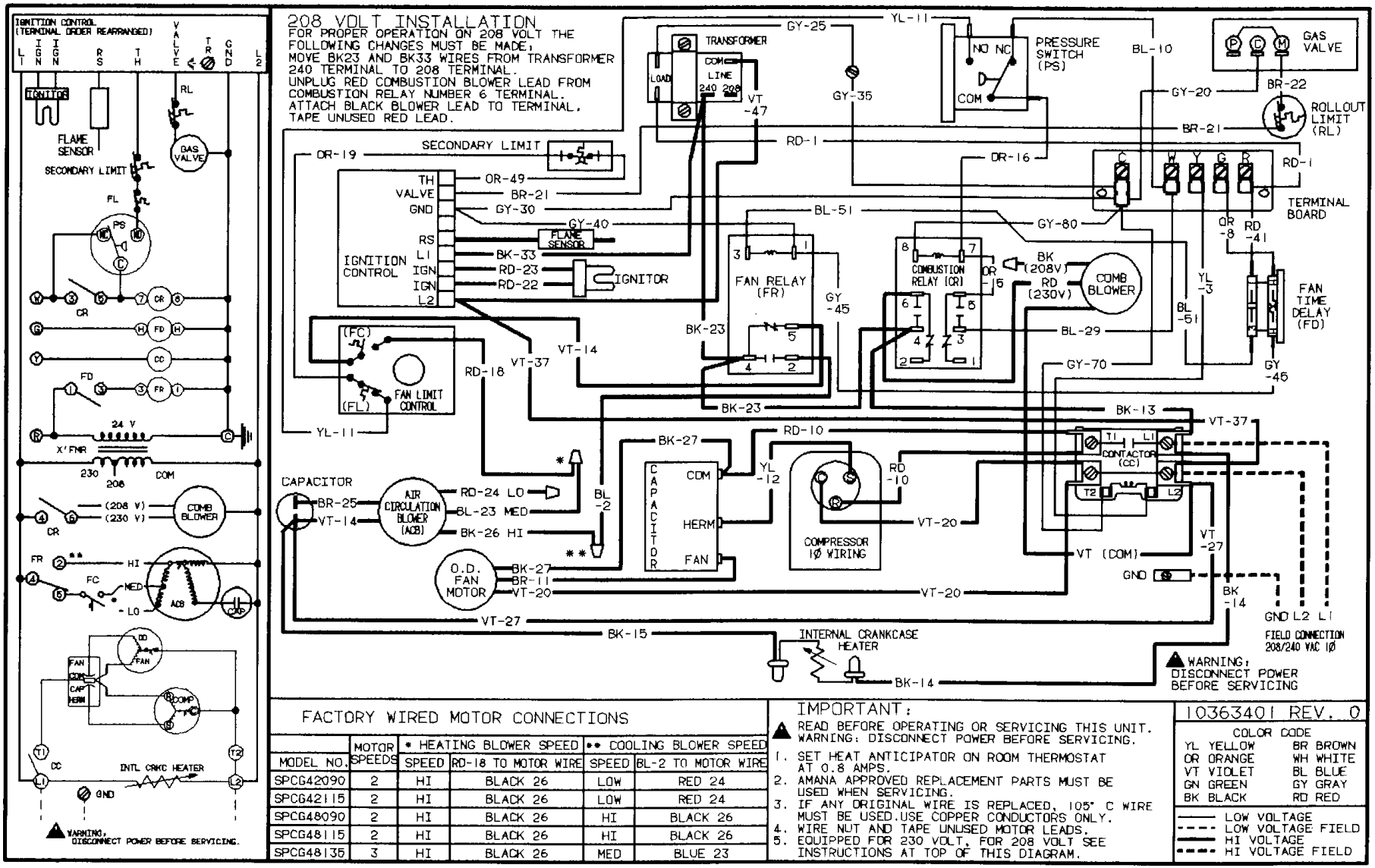
10128001 REV. 1

COLOR CODE	
YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BL BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS


208 VOLT INSTALLATION
FOR PROPER OPERATION ON 208 VOLT THE FOLLOWING CHANGES MUST BE MADE, MOVE BK23 AND BK33 WIRES FROM TRANSFORMER 240 TERMINAL TO 208 TERMINAL. UNPLUG RED COMBUSTION BLOWER LEAD FROM COMBUSTION RELAY NUMBER 6 TERMINAL. ATTACH BLACK BLOWER LEAD TO TERMINAL, TAPE UNUSED RED LEAD.
IGNITION CONTROL (TERMINAL ORDER REARRANGED)
TRANSFORMER
PRESSURE SWITCH (PS)
GAS VALVE
ROLLOUT LIMIT (RL)
TERMINAL BOARD
FAN TIME DELAY (FD)
SECONDARY LIMIT
FLAME SENSOR
IGNITOR
FAN RELAY (FR)
COMBUSTION RELAY (CR)
COMB BLOWER
FAN LIMIT CONTROL
CAPACITOR
AIR CIRCULATION BLOWER (ACB)
O.D. FAN MOTOR
COMPRESSOR 1Ø WIRING
CONTACTOR (CC)
INTERNAL CRANKCASE HEATER
FIELD CONNECTION 208/240 VAC 1Ø
WARNING; DISCONNECT POWER BEFORE SERVICING

FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BL-2 TO MOTOR WIRE
SPCG42090	2	HI	BLACK 26	LOW	RED 24
SPCG42115	2	HI	BLACK 26	LOW	RED 24
SPCG48090	2	HI	BLACK 26	HI	BLACK 26
SPCG48115	2	HI	BLACK 26	HI	BLACK 26
SPCG48135	3	HI	BLACK 26	MED	BLUE 23

IMPORTANT:

⚠ READ BEFORE OPERATING OR SERVICING THIS UNIT. WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT. FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

10363401 REV. 0

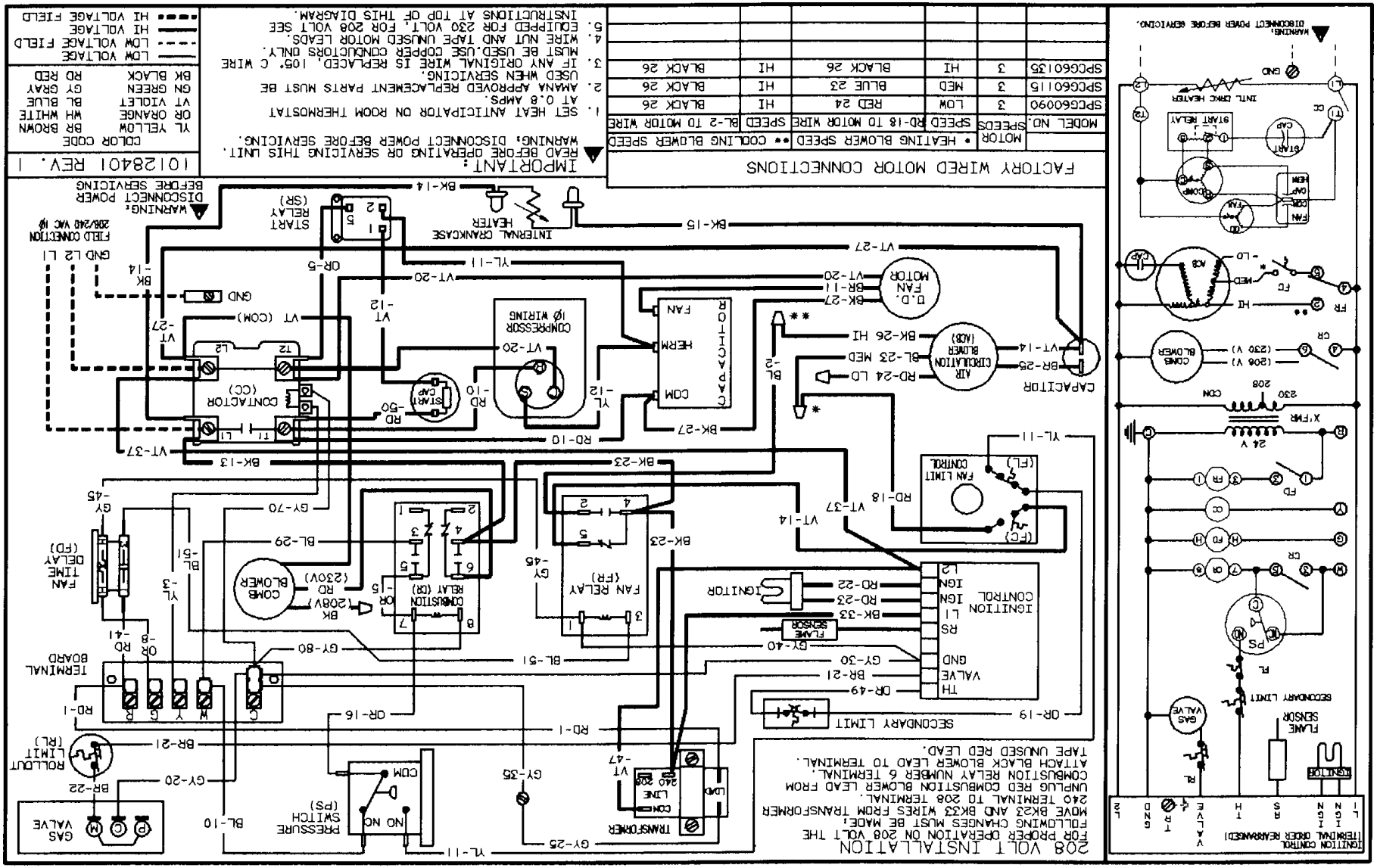
COLOR CODE

YL	YELLOW	BR	BROWN
OR	ORANGE	WH	WHITE
VT	VIOLET	BL	BLUE
GN	GREEN	GY	GRAY
BK	BLACK	RD	RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

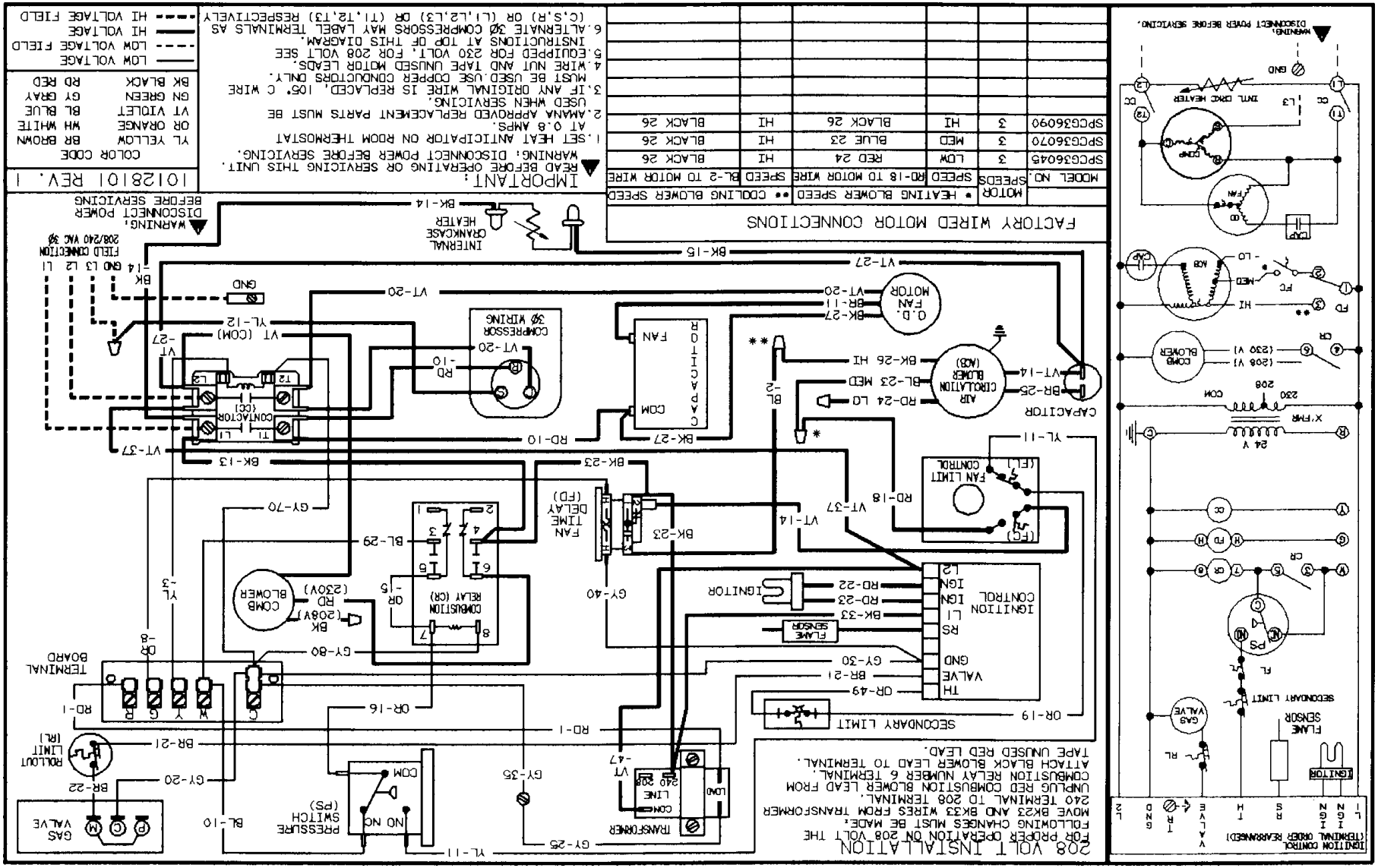
⚠ WARNING — **TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.**

WIRING DIAGRAMS


208 VOLT INSTALLATION
FOR PROPER OPERATION ON 208 VOLT THE FOLLOWING CHANGES MUST BE MADE:
MOVE BK23 AND BK33 WIRES FROM TRANSFORMER 240 TERMINAL TO 208 TERMINAL.
UNPLUG RED COMBUSTION BLOWER LEAD FROM COMBUSTION RELAY NUMBER 6 TERMINAL.
ATTACH BLACK BLOWER LEAD TO TERMINAL. TAPE UNUSED RED LEAD.
FACTORY WIRED MOTOR CONNECTIONS
IMPORTANT:
1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT. FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.
10128401 REV. 1
COLOR CODE
BK BLACK
RD RED
GN GREEN
GY GRAY
VT VIOLET
BL BLUE
OR ORANGE
WH WHITE
YL YELLOW
BR BROWN
LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD
TERMINAL BOARD
IGNITION CONTROL
FLAME SENSOR
SECONDARY LIMIT
FAN LIMIT CONTROL
CAPACITOR
CONTACTOR
TRANSFORMER
PRESSURE SWITCH
ROLLOUT LIMIT
FAN TIME DELAY
GAS VALVE
INTERNAL CRANKCASE HEATER
START RELAY
COMPRESSOR 1Ø WIRING
FAN RELAY
IGNITOR
WARNING: DISCONNECT POWER BEFORE SERVICING
FIELD CONNECTION 208/240 VAC 1Ø

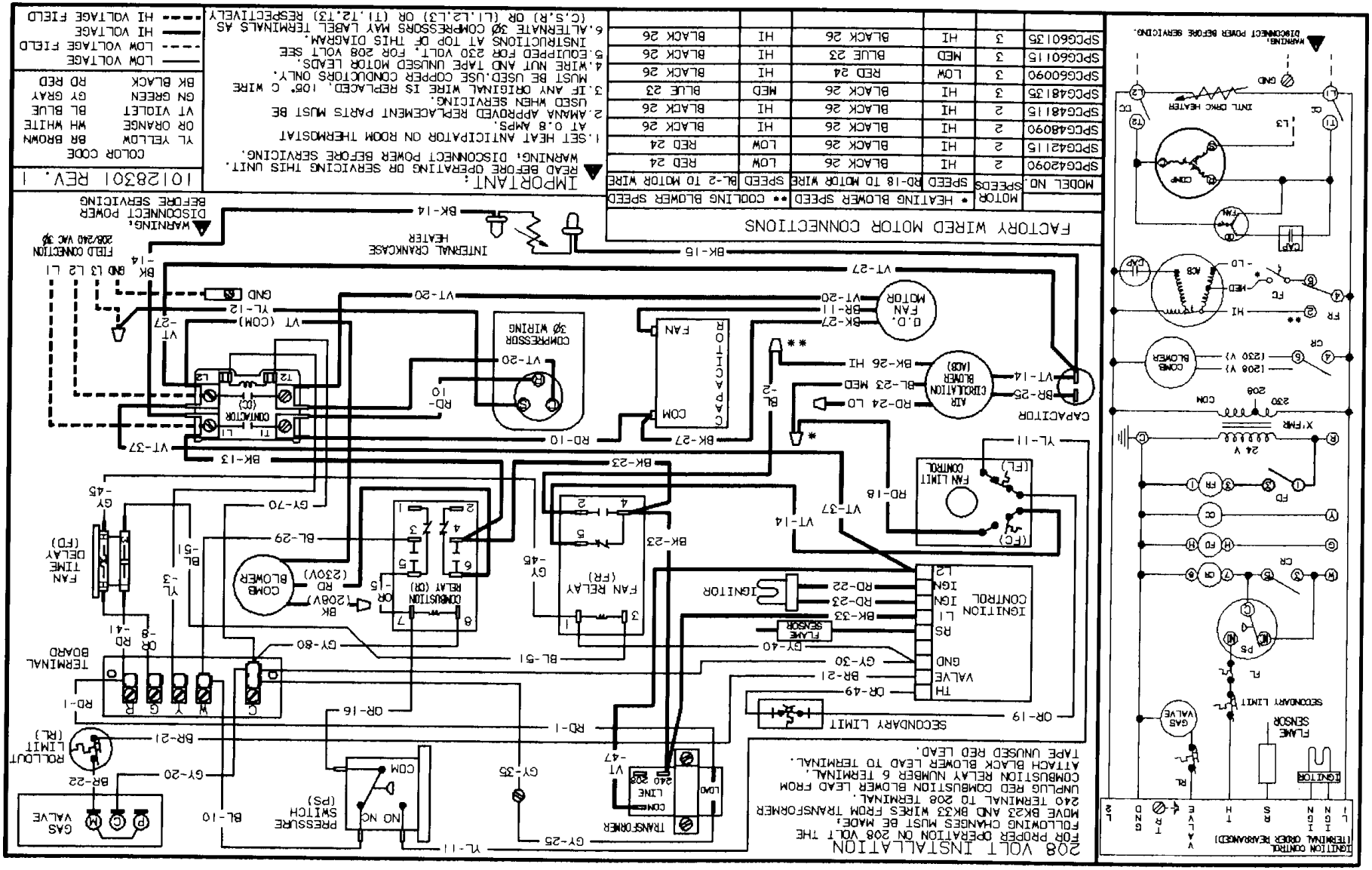
WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS


FACTORY WIRED MOTOR CONNECTIONS
MODEL NO.
MOTOR SPEEDS
* HEATING BLOWER SPEED
RD-18 TO MOTOR WIRE
** COOLING BLOWER SPEED
BL-2 TO MOTOR WIRE
SPCG36090 3 HI BLACK 26 HI BLACK 26
SPCG36070 3 MED BLUE 23 HI BLACK 26
SPCG36045 3 LOW RED 24 HI BLACK 26
IMPORTANT:
READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING, DISCONNECT POWER BEFORE SERVICING.
1.SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2.AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3.IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED.USE COPPER CONDUCTORS ONLY.
4.WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5.EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.
6.ALTERNATE 3Ø COMPRESSORS MAY LABEL TERMINALS AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY
LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD
COLOR CODE
YL YELLOW BR BROWN
OR ORANGE WH WHITE
VT VIOLET BL BLUE
GN GREEN GY GRAY
BK BLACK RD RED
10128101 REV. 1
208 VOLT INSTALLATION
FOR PROPER OPERATION ON 208 VOLT THE FOLLOWING CHANGES MUST BE MADE.
MOVE BK23 AND BK33 WIRES FROM TRANSFORMER 240 TERMINAL TO 208 TERMINAL.
UNPLUG RED COMBUSTION BLOWER LEAD FROM COMBUSTION RELAY NUMBER 6 TERMINAL.
ATTACH BLACK BLOWER LEAD TO TERMINAL.
TAPE UNUSED RED LEAD.
WARNING, DISCONNECT POWER BEFORE SERVICING.
FIELD CONNECTION 208/240 VAC 3Ø
INTERNAL CRANKCASE HEATER
COMPRESSOR 3Ø WIRING
CONTACTOR (CC)
CAPACITOR
AIR CIRCULATION BLOWER (AIR)
FAN LIMIT CONTROL (FLC)
FAN TIME DELAY (FD)
COMBUSTION RELAY (CR)
COMB BLOWER (230V) (208V)
IGNITION CONTROL
IGNITOR
FLAME SENSOR
SECONDARY LIMIT
TERMINAL BOARD
ROLLOUT LIMIT (RL)
PRESSURE SWITCH (PS)
GAS VALVE
TRANSFORMER
240 208 LINE LOAD
G.D. FAN MOTOR
IGNITION CONTROL (TERMINAL BOARD REARRANGED)
INT'L DRAC HEATER
COMP
FAN
CAP
HOB
COMB BLOWER
X'FMR
24 V
FLAME SENSOR
GAS VALVE
SECONDART LIMIT

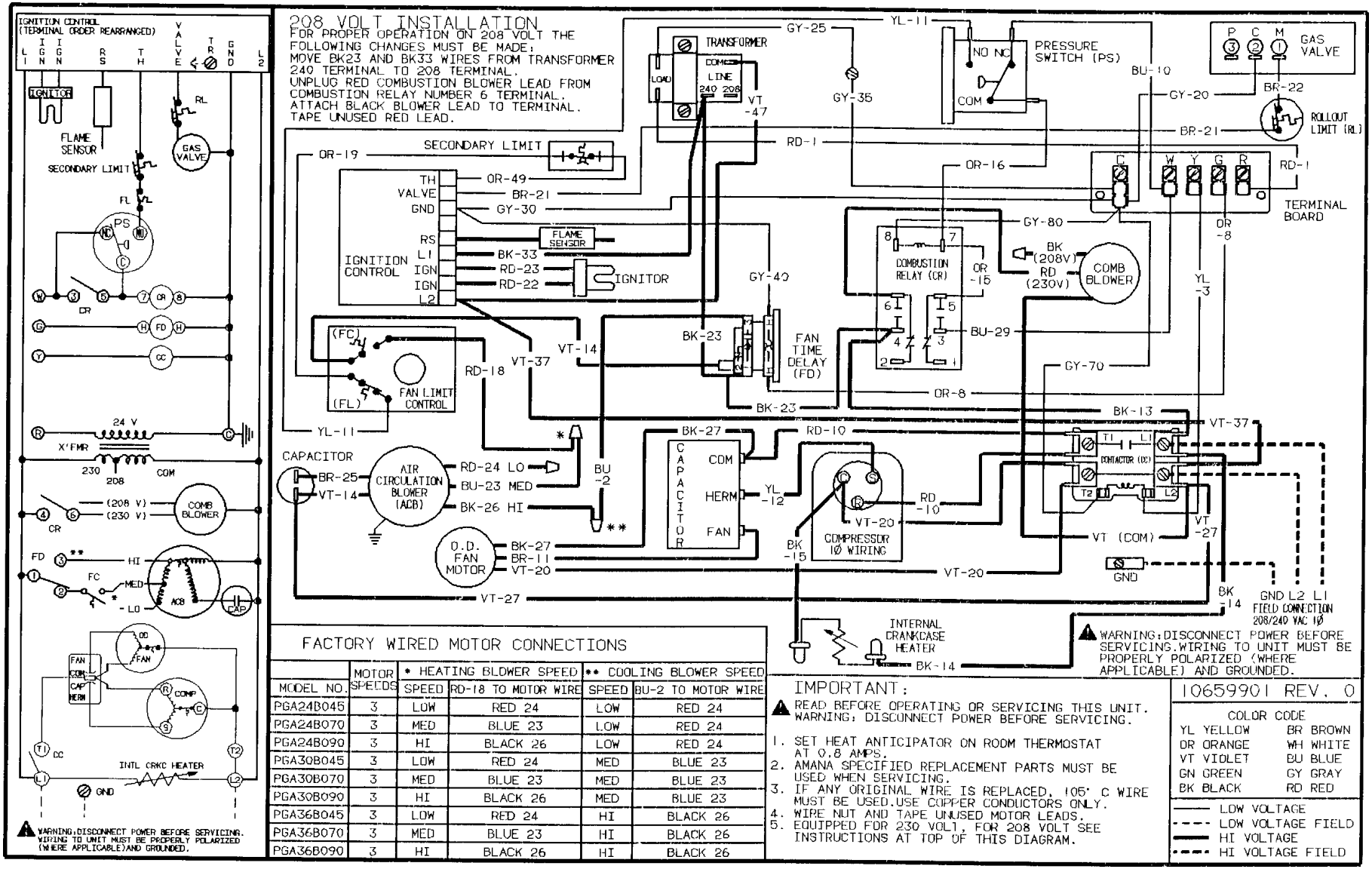
WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS


FACTORY WIRED MOTOR CONNECTIONS
MODEL NO.
MOTOR SPEEDS
* HEATING BLOWER SPEED
** COOLING BLOWER SPEED
SPCG42090 2 HI BLACK 26 HI BLACK 26
SPCG42115 2 HI BLACK 26 LOW RED 24
SPCG48090 2 HI BLACK 26 HI BLACK 26
SPCG48115 2 HI BLACK 26 HI BLACK 26
SPCG48135 3 HI BLACK 26 MED BLUE 23
SPCG60090 3 LOW RED 24 HI BLACK 26
SPCG60115 3 MED BLUE 23 HI BLACK 26
SPCG60135 3 HI BLACK 26 HI BLACK 26
IMPORTANT:
1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.
6. ALTERNATE 3Ø COMPRESSORS MAY LABEL TERMINALS AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY
208 VOLT INSTALLATION
FOR PROPER OPERATION ON 208 VOLT THE FOLLOWING CHANGES MUST BE MADE; MOVE BK23 AND BK33 WIRES FROM TRANSFORMER 240 TERMINAL TO 208 TERMINAL. UNPLUG RED COMBUSTION BLOWER LEAD FROM COMBUSTION RELAY NUMBER 6 TERMINAL. ATTACH BLACK BLOWER LEAD TO TERMINAL. TAPE UNUSED RED LEAD.
WARNING, DISCONNECT POWER BEFORE SERVICING
FIELD CONNECTION 208/240 VAC 3Ø
INTERNAL CRANKCASE HEATER
COMPRESSOR 3Ø WIRING
CAPACITOR
FAN
COM
O.D. FAN MOTOR
AIR CIRCULATION BLOWER (ADB)
FAN LIMIT CONTROL
(FLC)
(FL)
FAN RELAY (FR)
IGNITOR
IGNITION CONTROL
FLAME SENSOR
SECONDARY LIMIT
TERMINAL BOARD
ROLLOUT LIMIT (RL)
GAS VALVE
PRESSURE SWITCH (PS)
TRANSFORMER
LINE
LOAD
COMBUSTION RELAY (CR)
COMB BLOWER (230V)
(208V)
FAN TIME DELAY (FD)
CONTACTOR (CC)
COLOR CODE
BK BLACK RD RED
GN GREEN GY GRAY
VT VIOLET BL BLUE
OR ORANGE WH WHITE
YL YELLOW BR BROWN
LOW VOLTAGE FIELD
HI VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE FIELD
10128301 REV. I

WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BU-2 TO MOTOR WIRE
PGA24B045	3	LOW	RED 24	LOW	RED 24
PGA24B070	3	MED	BLUE 23	LOW	RED 24
PGA24B090	3	HI	BLACK 26	LOW	RED 24
PGA30B045	3	LOW	RED 24	MED	BLUE 23
PGA30B070	3	MED	BLUE 23	MED	BLUE 23
PGA30B090	3	HI	BLACK 26	MED	BLUE 23
PGA36B045	3	LOW	RED 24	HI	BLACK 26
PGA36B070	3	MED	BLUE 23	HI	BLACK 26
PGA36B090	3	HI	BLACK 26	HI	BLACK 26

IMPORTANT:

⚠ READ BEFORE OPERATING OR SERVICING THIS UNIT. WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

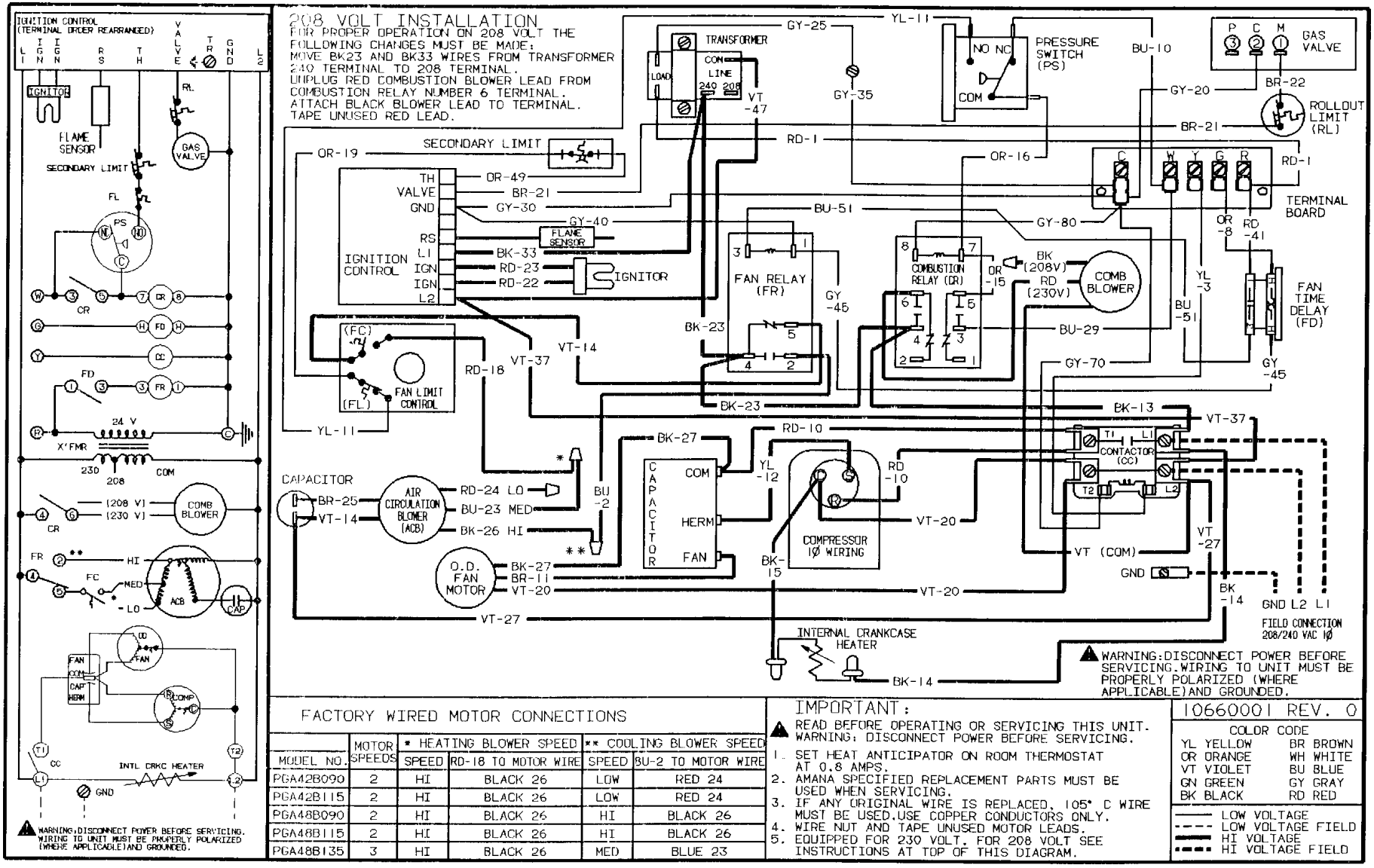
10659901 REV. 0

COLOR CODE	
YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

⚠ WARNING — TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BU-2 TO MOTOR WIRE
PGA42B090	2	HI	BLACK 26	LOW	RED 24
PGA42B115	2	HI	BLACK 26	LOW	RED 24
PGA48B090	2	HI	BLACK 26	HI	BLACK 26
PGA48B115	2	HI	BLACK 26	HI	BLACK 26
PGA48B135	3	HI	BLACK 26	MED	BLUE 23

IMPORTANT:

READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT. FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

10660001 REV. 0

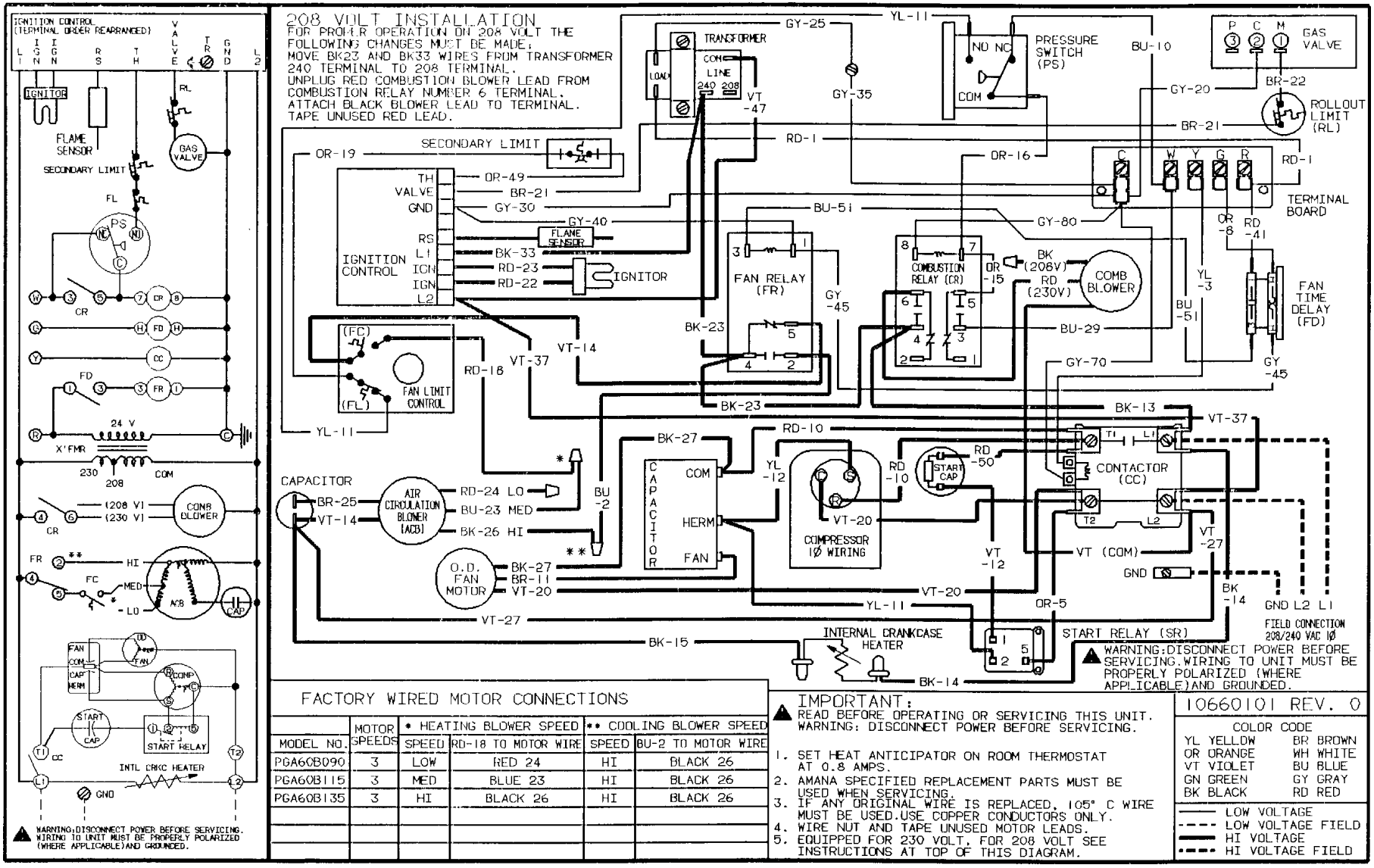
COLOR CODE

YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS


208 VOLT INSTALLATION
FOR PROPER OPERATION ON 208 VOLT THE FOLLOWING CHANGES MUST BE MADE; MOVE BK23 AND BK33 WIRES FROM TRANSFORMER 240 TERMINAL TO 208 TERMINAL. UNPLUG RED COMBUSTION BLOWER LEAD FROM COMBUSTION RELAY NUMBER 6 TERMINAL. ATTACH BLACK BLOWER LEAD TO TERMINAL. TAPE UNUSED RED LEAD.
IGNITION CONTROL (TERMINAL ORDER REARRANGED)
TRANSFORMER
PRESSURE SWITCH (PS)
GAS VALVE
ROLLOUT LIMIT (RL)
SECONDARY LIMIT
FLAME SENSOR
IGNITOR
FAN RELAY (FR)
COMBUSTION RELAY (CR)
COMB BLOWER
FAN TIME DELAY (FD)
TERMINAL BOARD
FAN LIMIT CONTROL
CAPACITOR
AIR CIRCULATION BLOWER (ACB)
O.D. FAN MOTOR
COMPRESSOR 1Ø WIRING
CONTACTOR (CC)
START CAP
START RELAY (SR)
INTERNAL CRANKCASE HEATER
FIELD CONNECTION 208/240 VAC 1Ø
WARNING:DISCONNECT POWER BEFORE SERVICING.WIRING TO UNIT MUST BE PROPERLY POLARIZED (WHERE APPLICABLE)AND GROUNDED.

FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BU-2 TO MOTOR WIRE
PGA60B090	3	LOW	RED 24	HI	BLACK 26
PGA60B115	3	MED	BLUE 23	HI	BLACK 26
PGA60B135	3	HI	BLACK 26	HI	BLACK 26

IMPORTANT:
READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED.USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

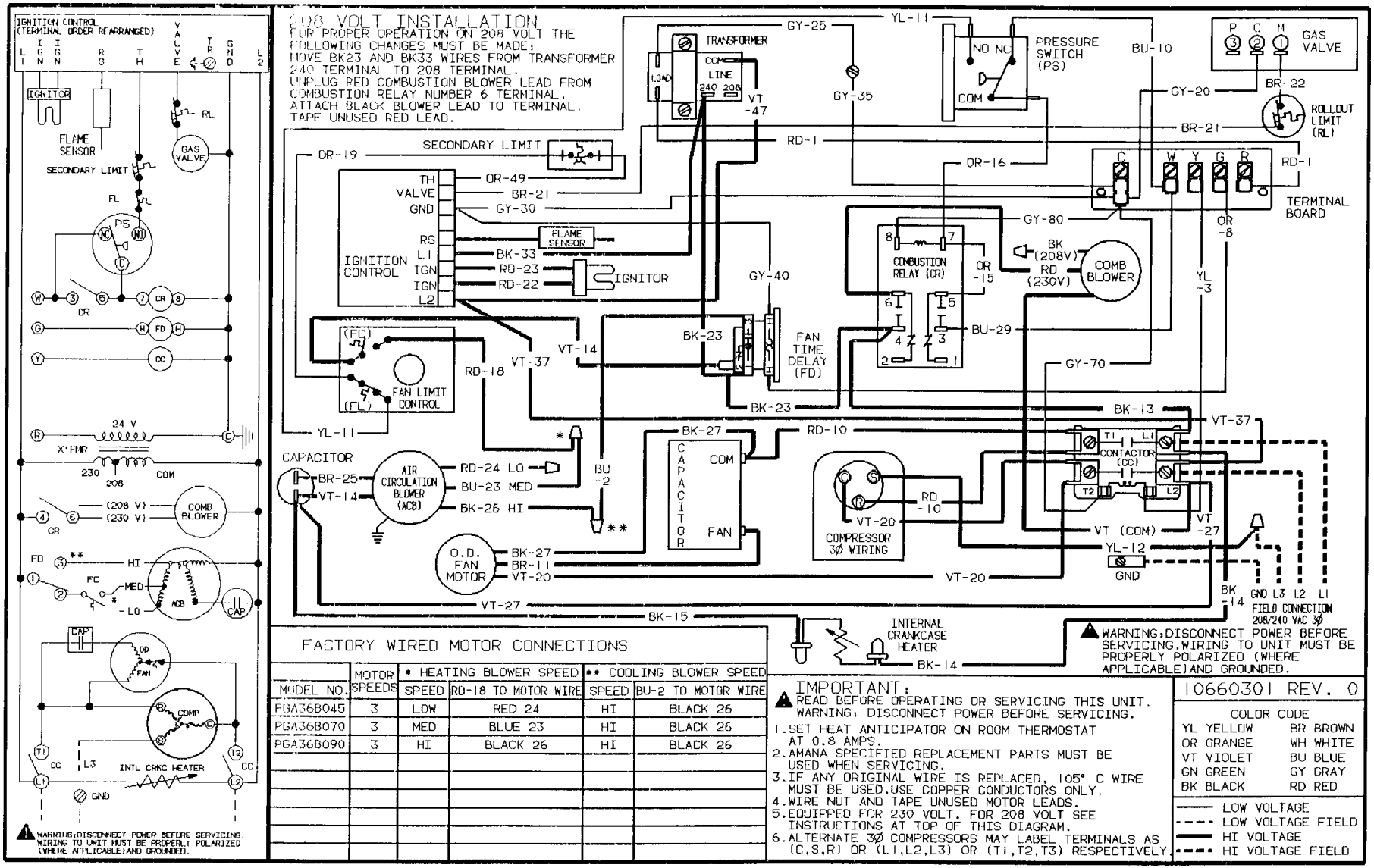
10660101 REV. 0

COLOR CODE	
YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS


208 VOLT INSTALLATION
FOR PROPER OPERATION ON 208 VOLT THE FOLLOWING CHANGES MUST BE MADE; MOVE BK23 AND BK33 WIRES FROM TRANSFORMER 240 TERMINAL TO 208 TERMINAL. UNPLUG RED COMBUSTION BLOWER LEAD FROM COMBUSTION RELAY NUMBER 6 TERMINAL. ATTACH BLACK BLOWER LEAD TO TERMINAL. TAPE UNUSED RED LEAD.
IGNITION CONTROL (TERMINAL ORDER REARRANGED)
TRANSFORMER
PRESSURE SWITCH (PS)
GAS VALVE
ROLLOUT LIMIT (RL)
TERMINAL BOARD
SECONDARY LIMIT
FLAME SENSOR
IGNITOR
COMBUSTION RELAY (DR)
COMB BLOWER
FAN TIME DELAY (FD)
FAN LIMIT CONTROL
CAPACITOR
AIR CIRCULATION BLOWER (ACB)
O.D. FAN MOTOR
COMPRESSOR 3Ø WIRING
CONTACTOR (CC)
INTERNAL CRANKCASE HEATER
GND
FIELD CONNECTION 208/240 VAC 3Ø
WARNING: DISCONNECT POWER BEFORE SERVICING. WIRING TO UNIT MUST BE PROPERLY POLARIZED (WHERE APPLICABLE) AND GROUNDED.

FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BU-2 TO MOTOR WIRE
PGA36B045	3	LOW	RED 24	HI	BLACK 26
PGA36B070	3	MED	BLUE 23	HI	BLACK 26
PGA36B090	3	HI	BLACK 26	HI	BLACK 26

IMPORTANT:
READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT. FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.
6. ALTERNATE 3Ø COMPRESSORS MAY LABEL TERMINALS AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY.

10660301 REV. 0

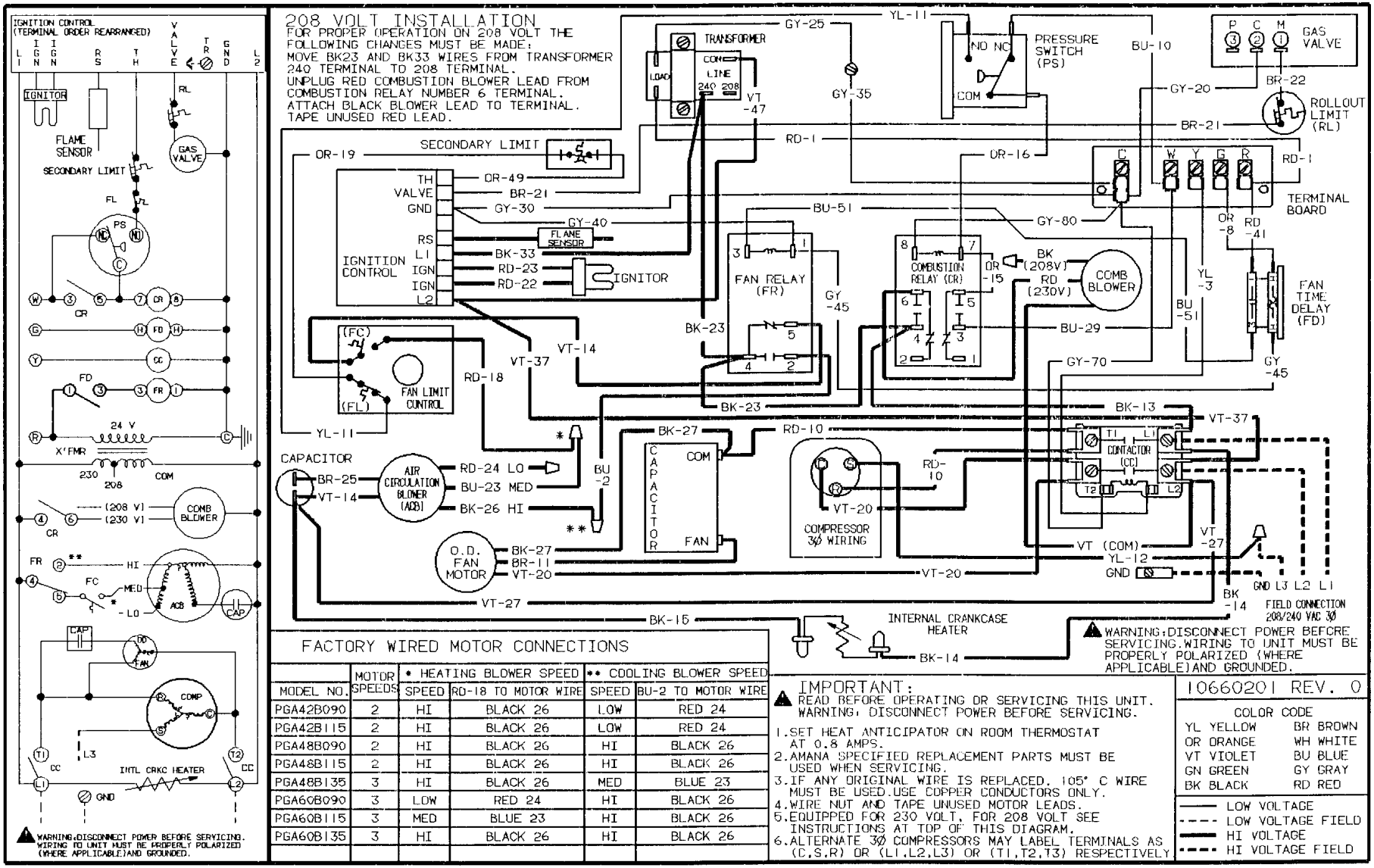
COLOR CODE

YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS


IGNITION CONTROL (TERMINAL ORDER REARRANGED)
208 VOLT INSTALLATION
FOR PROPER OPERATION ON 208 VOLT THE FOLLOWING CHANGES MUST BE MADE:
MOVE BK23 AND BK33 WIRES FROM TRANSFORMER 240 TERMINAL TO 208 TERMINAL.
UNPLUG RED COMBUSTION BLOWER LEAD FROM COMBUSTION RELAY NUMBER 6 TERMINAL.
ATTACH BLACK BLOWER LEAD TO TERMINAL.
TAPE UNUSED RED LEAD.
TRANSFORMER
PRESSURE SWITCH (PS)
GAS VALVE
ROLLOUT LIMIT (RL)
SECONDARY LIMIT
FLAME SENSOR
IGNITOR
IGNITION CONTROL
FAN RELAY (FR)
COMBUSTION RELAY (CR)
COMB BLOWER
FAN TIME DELAY (FD)
TERMINAL BOARD
FAN LIMIT CONTROL
CAPACITOR
AIR CIRCULATION BLOWER (ACB)
O.D. FAN MOTOR
COMPRESSOR 3Ø WIRING
CONTACTOR (CC)
INTERNAL CRANKCASE HEATER
FIELD CONNECTION 208/240 VAC 3Ø
WARNING: DISCONNECT POWER BEFORE SERVICING. WIRING TO UNIT MUST BE PROPERLY POLARIZED (WHERE APPLICABLE) AND GROUNDED.

FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BU-2 TO MOTOR WIRE
PGA42B090	2	HI	BLACK 26	LOW	RED 24
PGA42B115	2	HI	BLACK 26	LOW	RED 24
PGA48B090	2	HI	BLACK 26	HI	BLACK 26
PGA48B115	2	HI	BLACK 26	HI	BLACK 26
PGA48B135	3	HI	BLACK 26	MED	BLUE 23
PGA60B090	3	LOW	RED 24	HI	BLACK 26
PGA60B115	3	MED	BLUE 23	HI	BLACK 26
PGA60B135	3	HI	BLACK 26	HI	BLACK 26

IMPORTANT:

READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.
6. ALTERNATE 3Ø COMPRESSORS MAY LABEL TERMINALS AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY

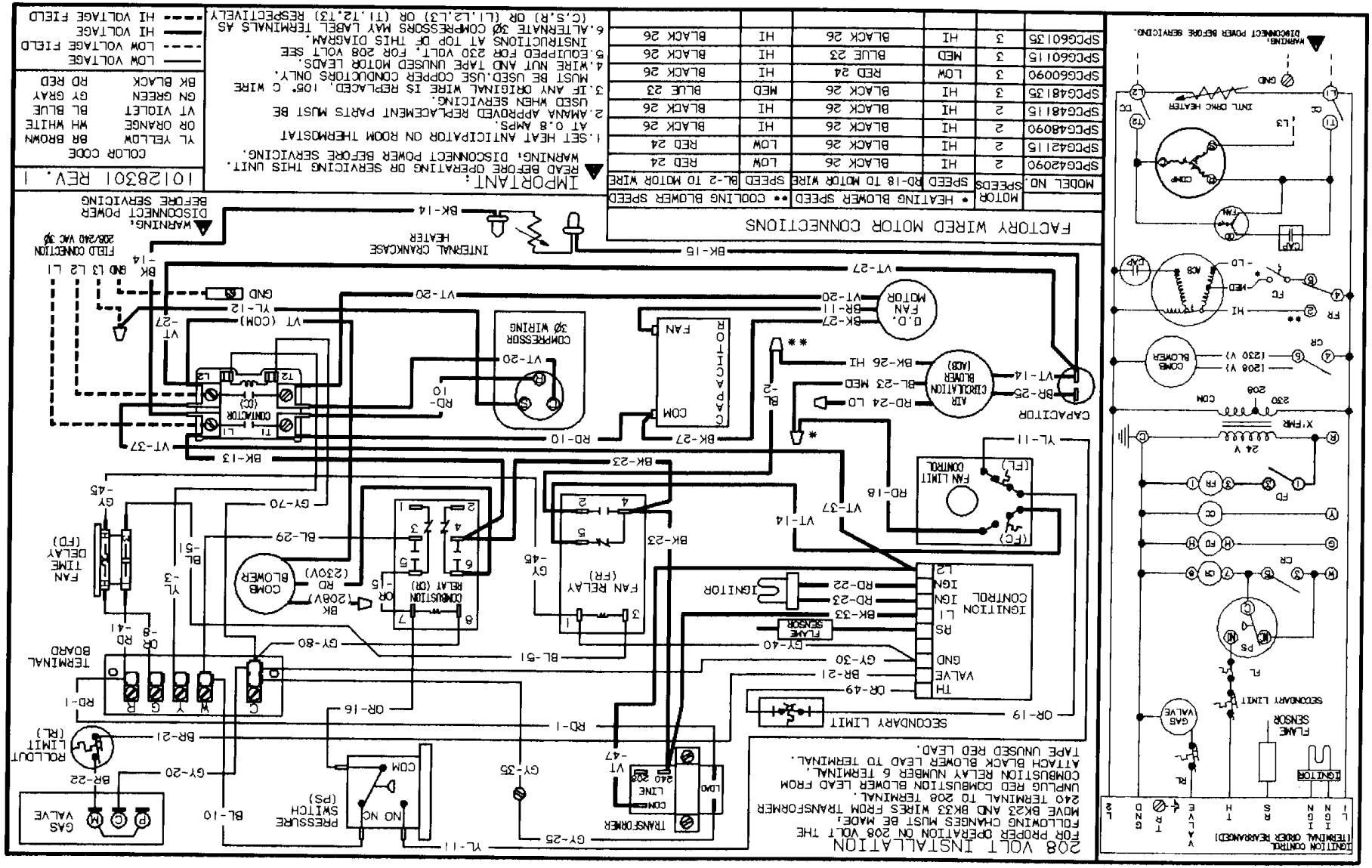
10660201 REV. 0

COLOR CODE	
YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

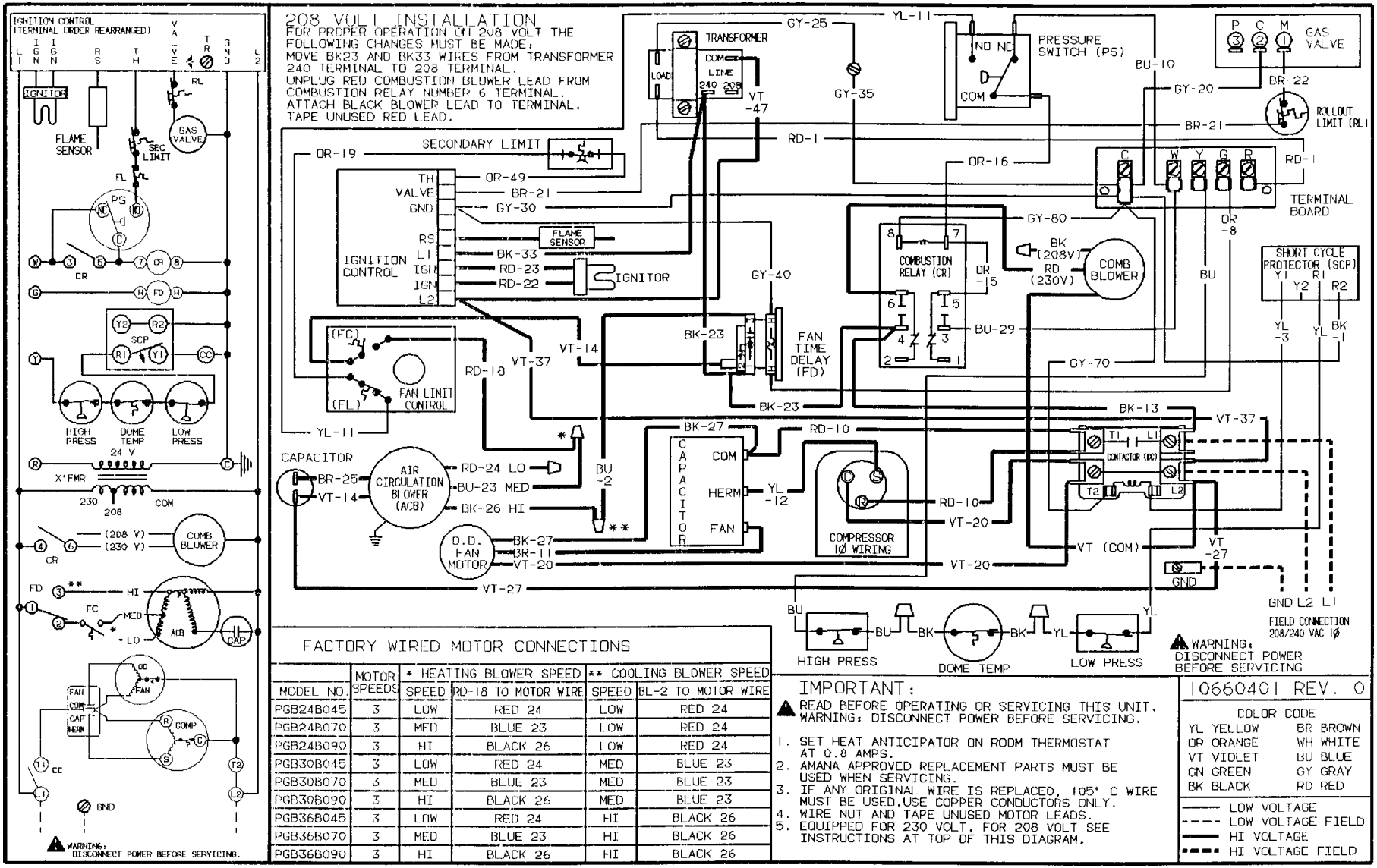
WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS


FACTORY WIRED MOTOR CONNECTIONS
MODEL NO.
MOTOR SPEEDS
* HEATING BLOWER SPEED
** COOLING BLOWER SPEED
SPC6420905 2 HI BLACK 26 LOW RED 24 SPEED BL-2 TO MOTOR WIRE
SPC6421155 2 HI BLACK 26 LOW RED 24
SPC6480905 2 HI BLACK 26 HI BLACK 26
SPC6481155 2 HI BLACK 26 HI BLACK 26
SPC6481355 3 HI BLACK 26 MED BLUE 23
SPC6600905 3 LOW RED 24 HI BLACK 26
SPC6601155 3 MED BLUE 23 HI BLACK 26
SPC6601355 3 HI BLACK 26 HI BLACK 26
SPEED RD-18 TO MOTOR WIRE
IMPORTANT:
READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING, DISCONNECT POWER BEFORE SERVICING.
1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.
6. ALTERNATE 3Ø COMPRESSORS MAY LABEL TERMINALS AS (C,S,R) OR (L1,L2,L3) OR (T1,T2,T3) RESPECTIVELY.
HI VOLTAGE FIELD
HI VOLTAGE
LOW VOLTAGE FIELD
LOW VOLTAGE
COLOR CODE
BK BLACK RD RED
GN GREEN GY GRAY
VT VIOLET BL BLUE
OR ORANGE WH WHITE
YL YELLOW BR BROWN
10128301 REV. I
208 VOLT INSTALLATION
FOR PROPER OPERATION ON 208 VOLT THE FOLLOWING CHANGES MUST BE MADE.
MOVE BK23 AND BK33 WIRES FROM TRANSFORMER 240 TERMINAL TO 208 TERMINAL.
UNPLUG RED COMBUSTION BLOWER LEAD FROM COMBUSTION RELAY NUMBER 6 TERMINAL.
ATTACH BLACK BLOWER LEAD TO TERMINAL.
TAPE UNUSED RED LEAD.
IGNITION CONTROL (TERMINAL ORDER REARRANGED)
WARNING, DISCONNECT POWER BEFORE SERVICING.
INTERNAL CRANKCASE HEATER
FIELD CONNECTION 208/240 VAC 3Ø
WARNING, DISCONNECT POWER BEFORE SERVICING
COMPRESSOR 3Ø WIRING
CAPACITOR
FAN MOTOR
D.D. FAN MOTOR
AIR CIRCULATION BLOWER (ADB)
COMB BLOWER (230V)
(208V)
FAN RELAY (FR)
FAN LIMIT CONTROL (FL)
SECONDARY LIMIT
IGNITION CONTROL
IGNITOR
FLAME SENSOR
GAS VALVE
PRESSURE SWITCH (PS)
ROLLOUT LIMIT (RL)
TERMINAL BOARD
FAN TIME DELAY (FD)
TRANSFORMER
CONTACTOR
COMBUSTION (OR) RELAY
INT. DRKC HEATER
CONVENTIONAL ELECTRIC HEAT
CONVENTIONAL GAS HEAT
HEAT PUMP

WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BL-2 TO MOTOR WIRE
PGB24B045	3	LOW	RED 24	LOW	RED 24
PGB24B070	3	MED	BLUE 23	LOW	RED 24
PGB24B090	3	HI	BLACK 26	LOW	RED 24
PGB30B045	3	LOW	RED 24	MED	BLUE 23
PGB30B070	3	MED	BLUE 23	MED	BLUE 23
PGB30B090	3	HI	BLACK 26	MED	BLUE 23
PGB36B045	3	LOW	RED 24	HI	BLACK 26
PGB36B070	3	MED	BLUE 23	HI	BLACK 26
PGB36B090	3	HI	BLACK 26	HI	BLACK 26

IMPORTANT:

⚠ READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105° C WIRE MUST BE USED. USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

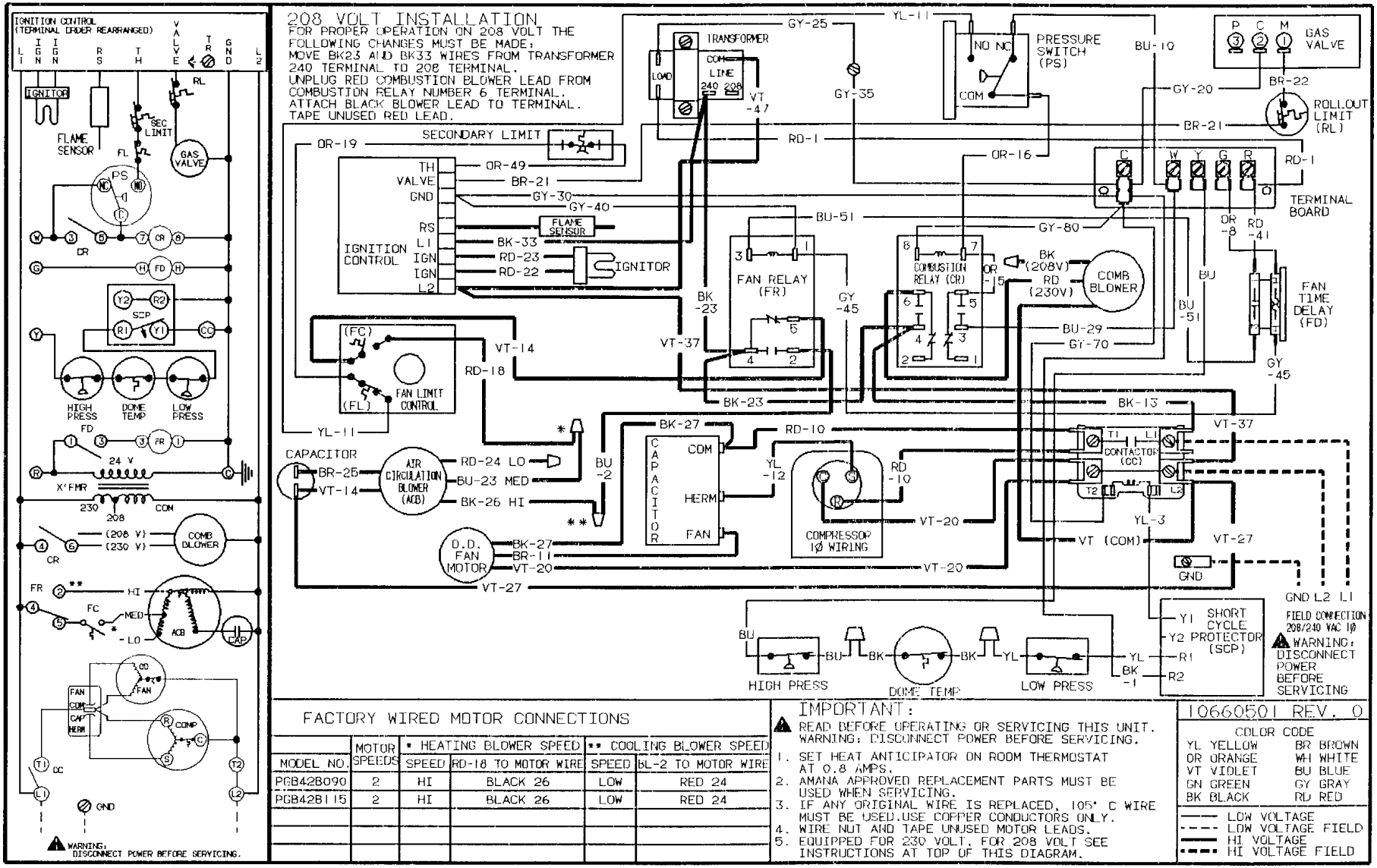
10660401 REV. 0

COLOR CODE	
YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

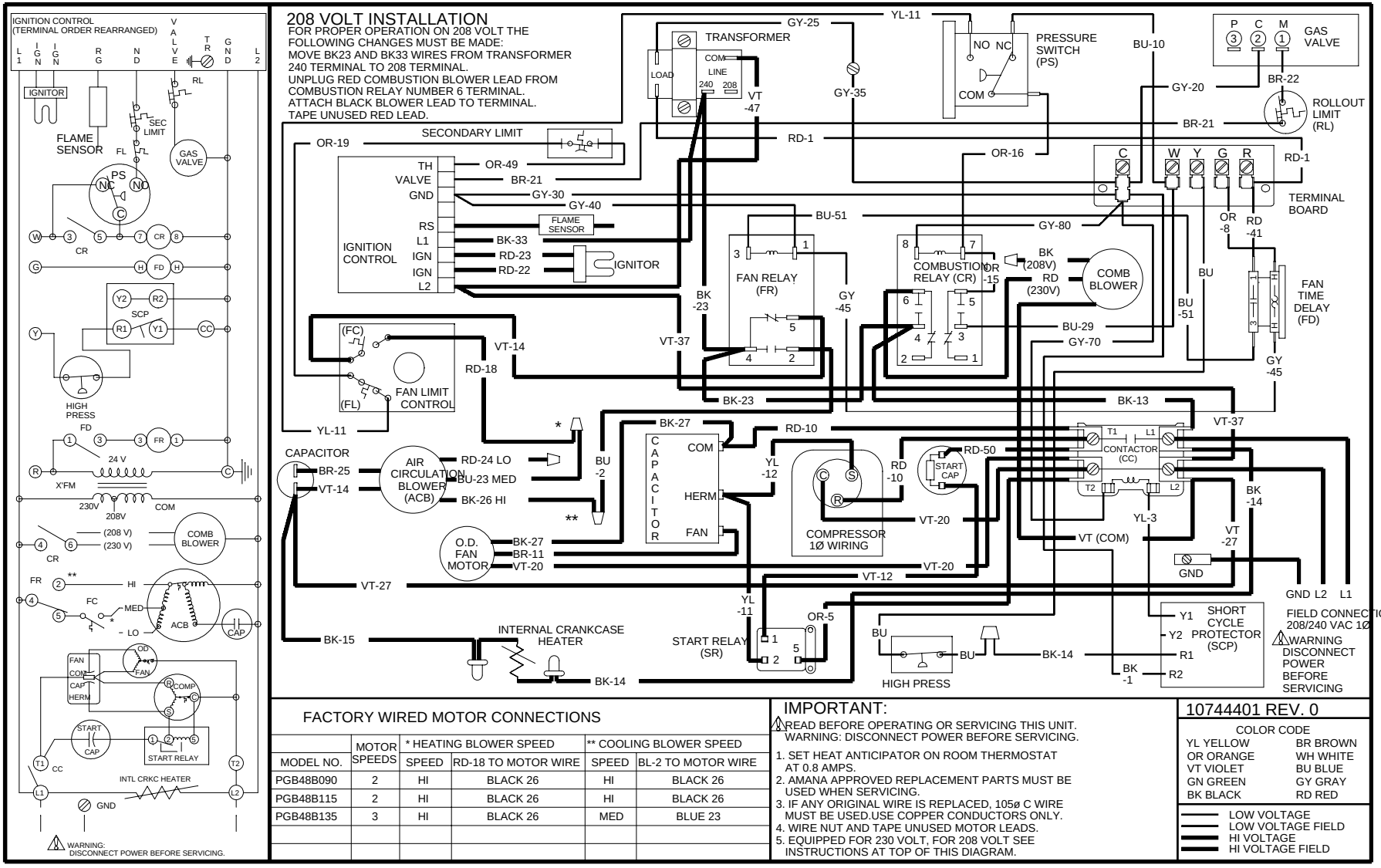
⚠ WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



WARNING TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BL-2 TO MOTOR WIRE
PGB48B090	2	HI	BLACK 26	HI	BLACK 26
PGB48B115	2	HI	BLACK 26	HI	BLACK 26
PGB48B135	3	HI	BLACK 26	MED	BLUE 23

IMPORTANT:

⚠ READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105ø C WIRE MUST BE USED.USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

10744401 REV. 0

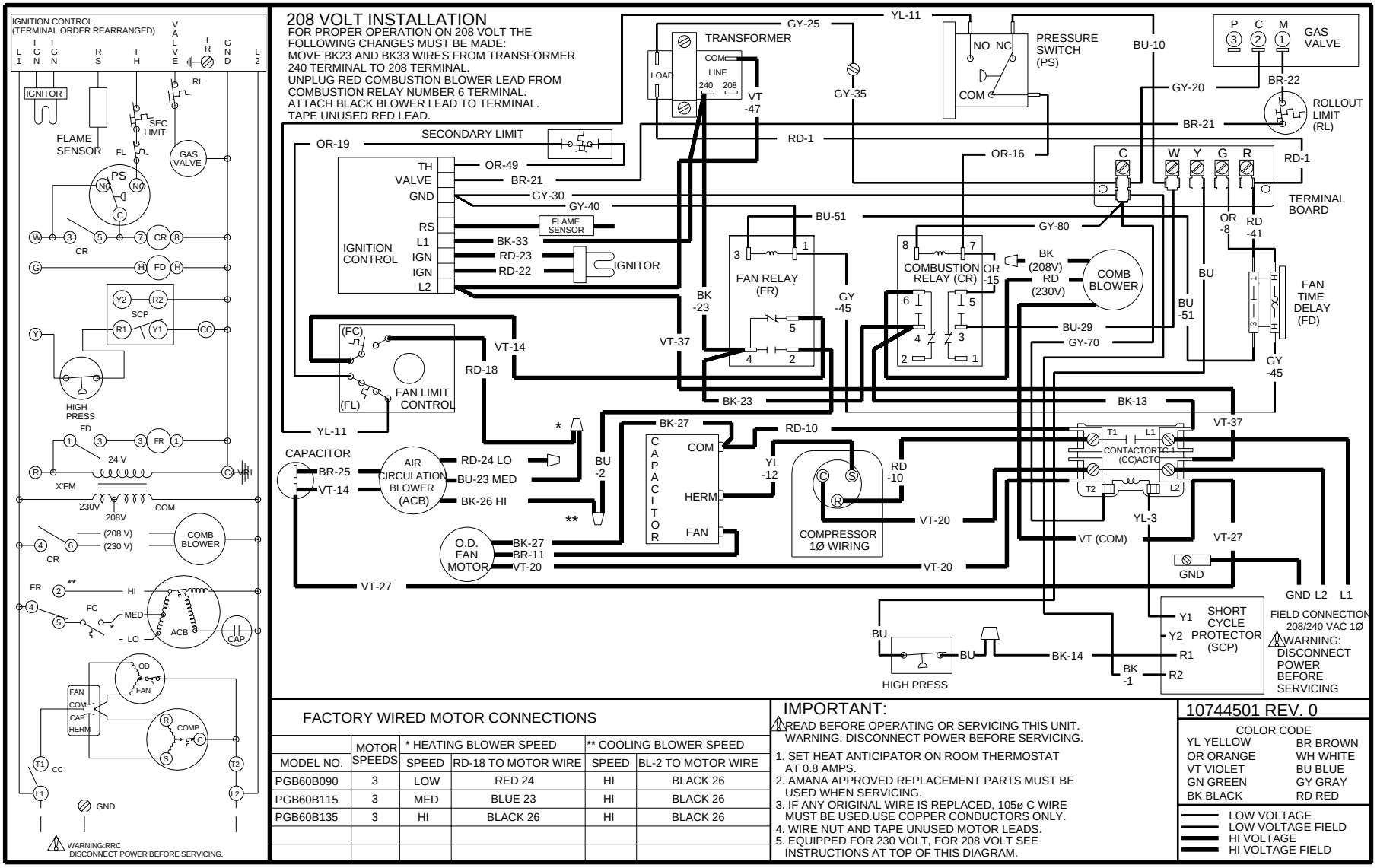
COLOR CODE	
YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

⚠ WARNING — **TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.**

PGB60Bxx2x

WIRING DIAGRAMS



FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	MOTOR SPEEDS	* HEATING BLOWER SPEED		** COOLING BLOWER SPEED	
		SPEED	RD-18 TO MOTOR WIRE	SPEED	BL-2 TO MOTOR WIRE
PGB60B090	3	LOW	RED 24	HI	BLACK 26
PGB60B115	3	MED	BLUE 23	HI	BLACK 26
PGB60B135	3	HI	BLACK 26	HI	BLACK 26

IMPORTANT:

⚠ READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105ø C WIRE MUST BE USED.USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

10744501 REV. 0

COLOR CODE

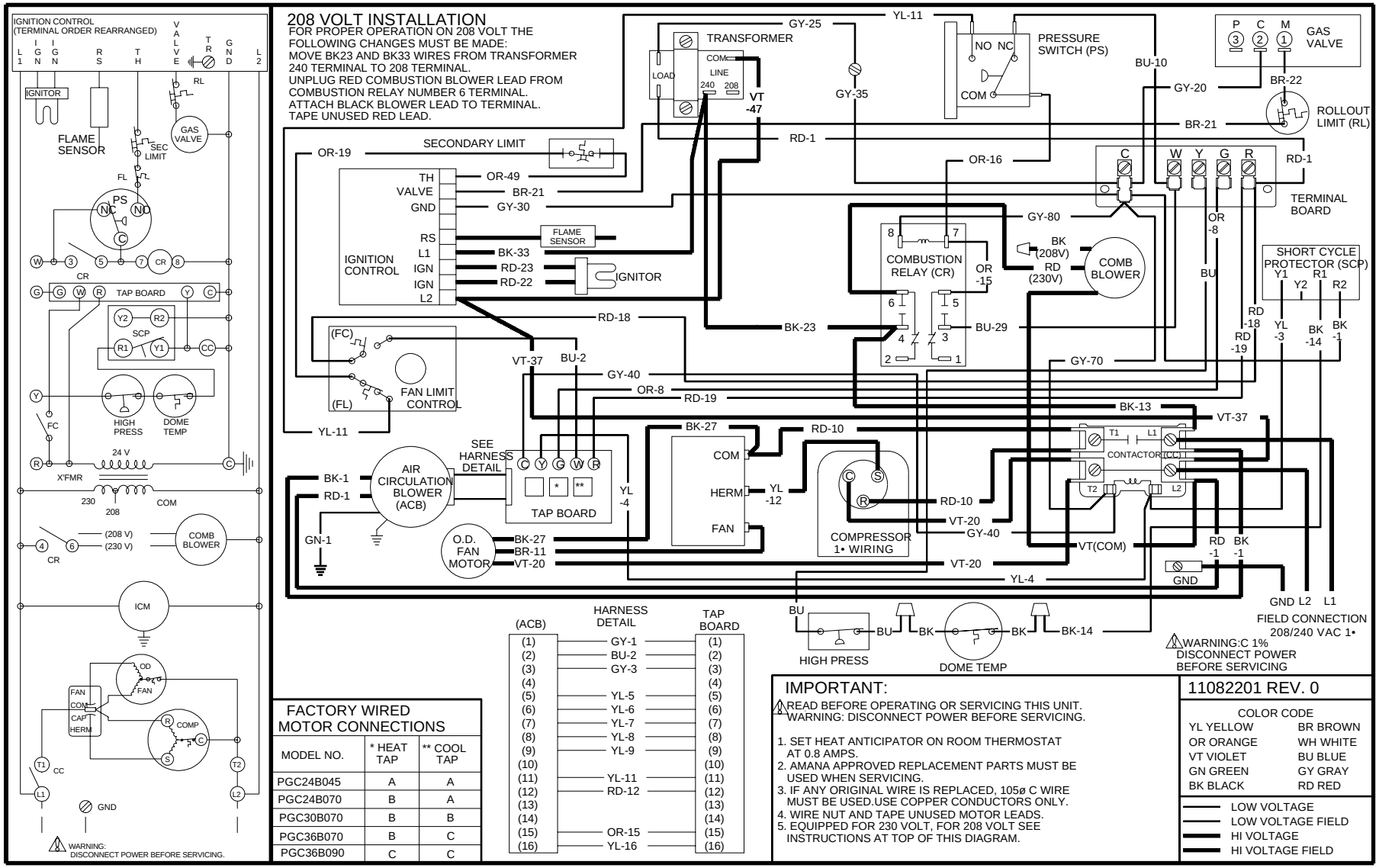
YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

⚠ WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



FACTORY WIRED MOTOR CONNECTIONS

MODEL NO.	* HEAT TAP	** COOL TAP
PGC24B045	A	A
PGC24B070	B	A
PGC30B070	B	B
PGC36B070	B	C
PGC36B090	C	C

IMPORTANT:

⚠READ BEFORE OPERATING OR SERVICING THIS UNIT.
WARNING: DISCONNECT POWER BEFORE SERVICING.

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.8 AMPS.
2. AMANA APPROVED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY ORIGINAL WIRE IS REPLACED, 105ø C WIRE MUST BE USED.USE COPPER CONDUCTORS ONLY.
4. WIRE NUT AND TAPE UNUSED MOTOR LEADS.
5. EQUIPPED FOR 230 VOLT, FOR 208 VOLT SEE INSTRUCTIONS AT TOP OF THIS DIAGRAM.

11082201 REV. 0

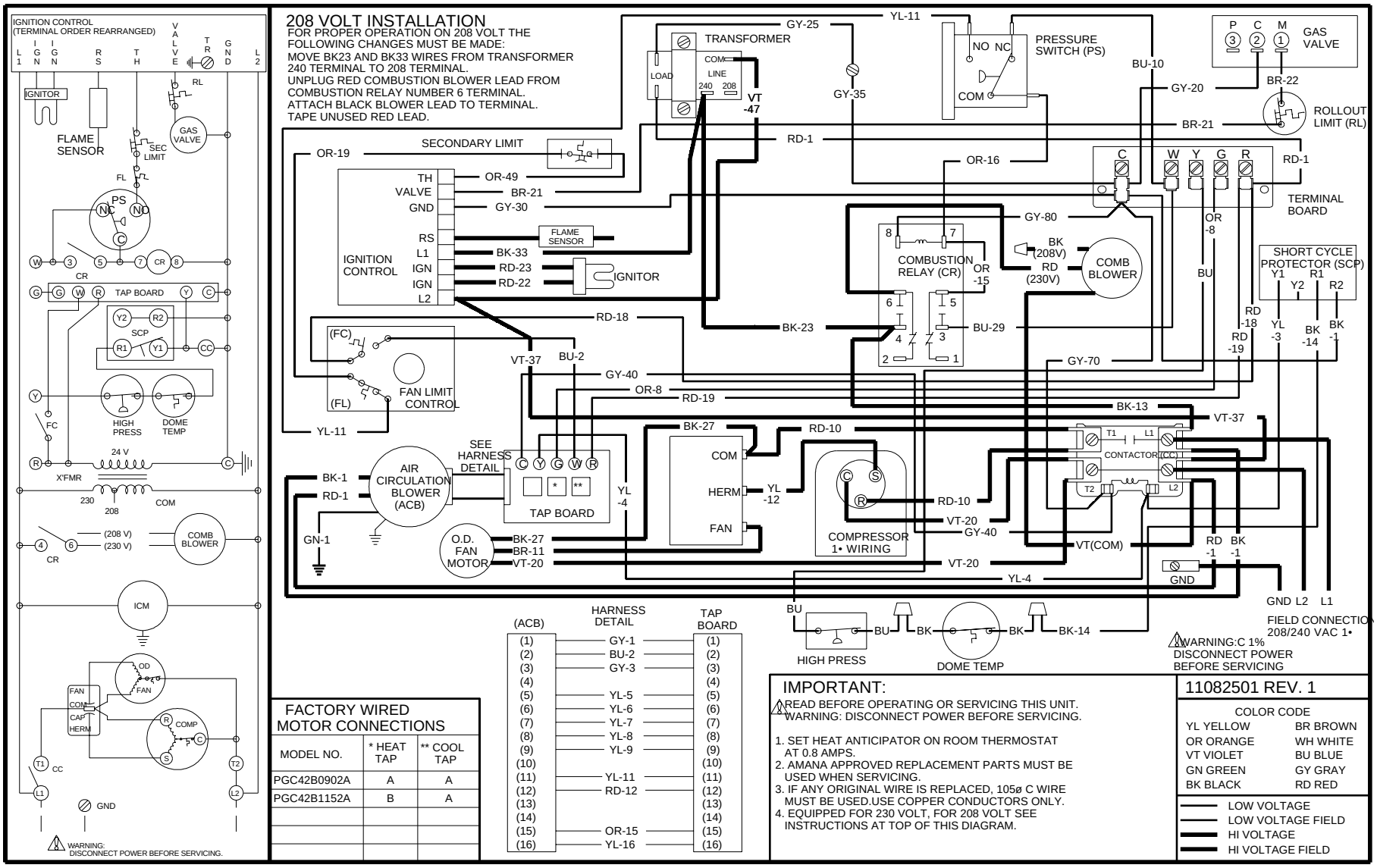
COLOR CODE

YL YELLOW	BR BROWN
OR ORANGE	WH WHITE
VT VIOLET	BU BLUE
GN GREEN	GY GRAY
BK BLACK	RD RED

LOW VOLTAGE
LOW VOLTAGE FIELD
HI VOLTAGE
HI VOLTAGE FIELD

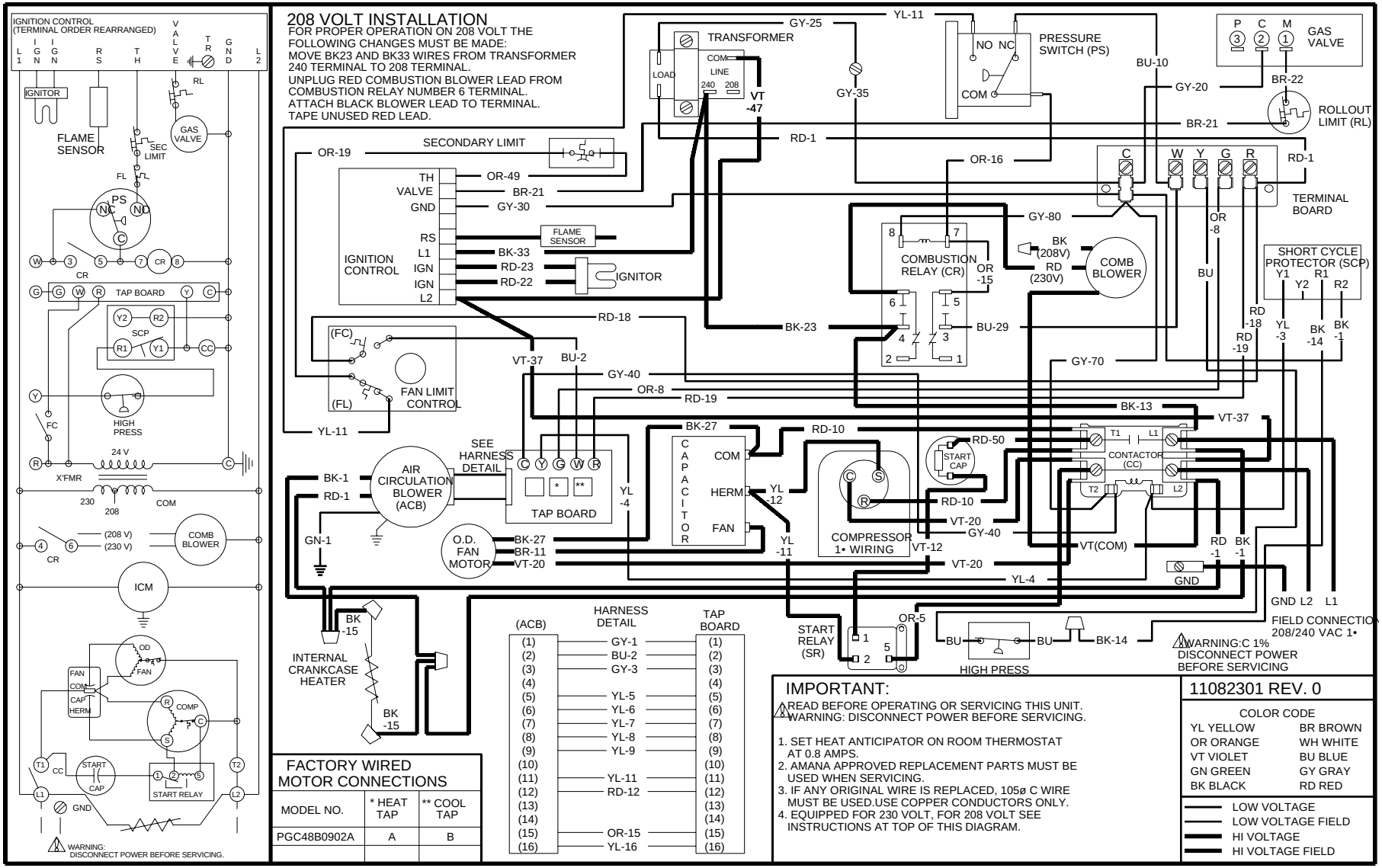
⚠ WARNING **TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.**

WIRING DIAGRAMS



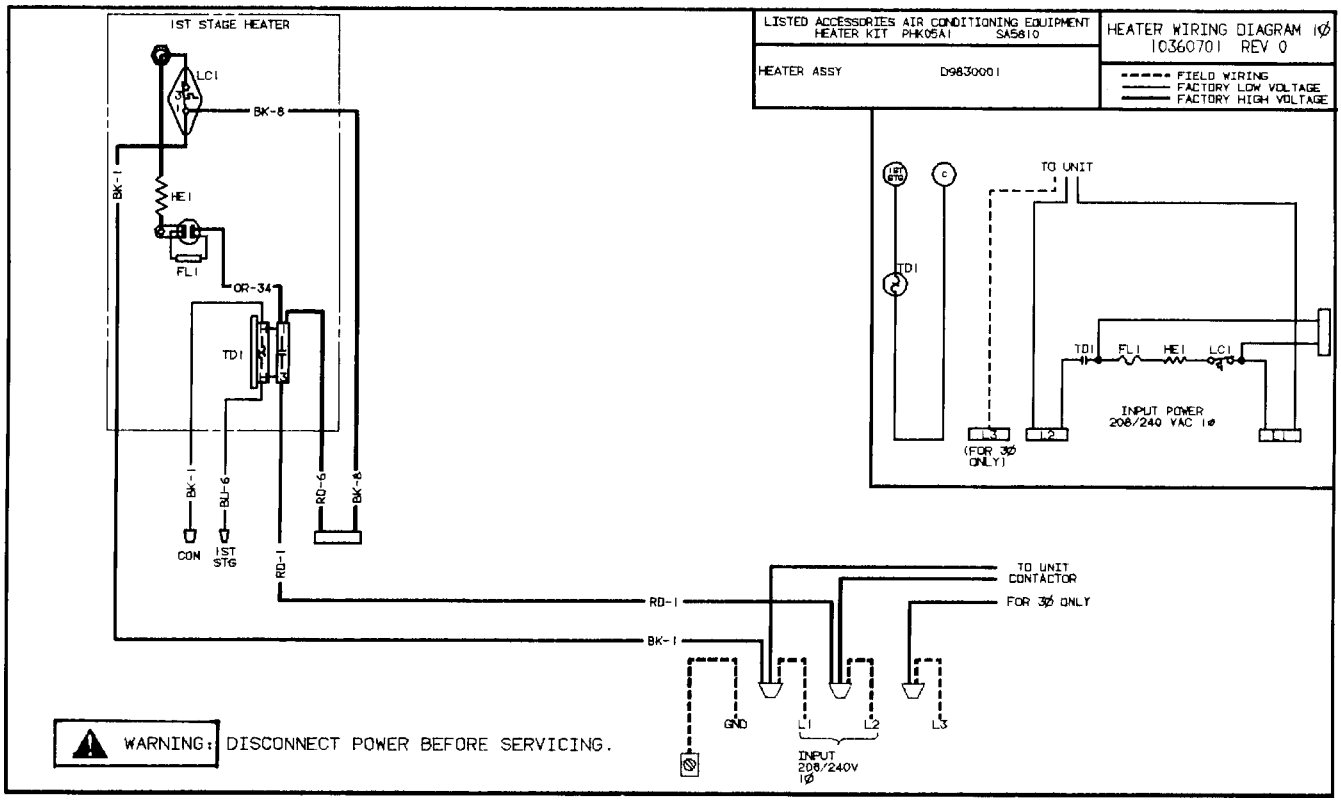
WARNING **TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.**

WIRING DIAGRAMS

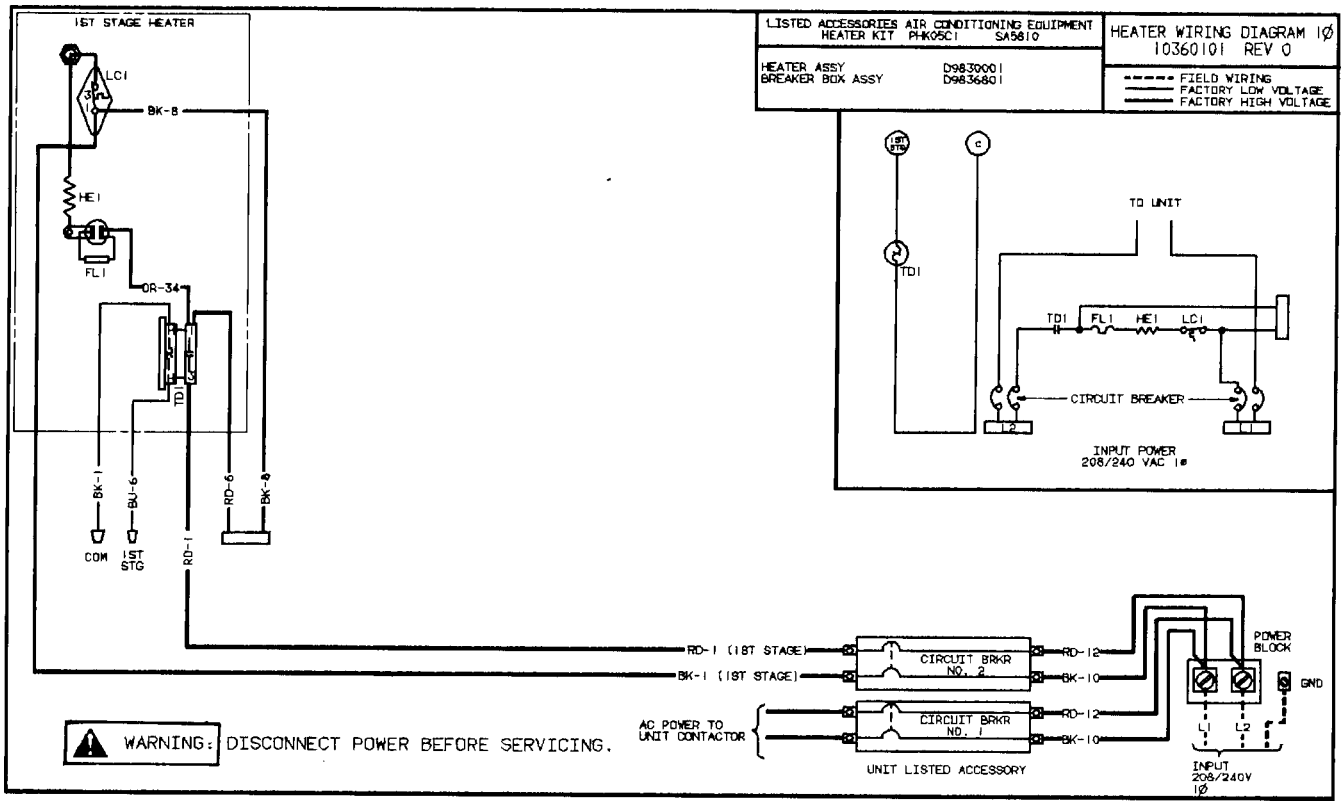


WARNING **TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.**

WIRING DIAGRAMS



4.8 KW Single or Three Phase (PHK05A1) or (PHK105 similar)

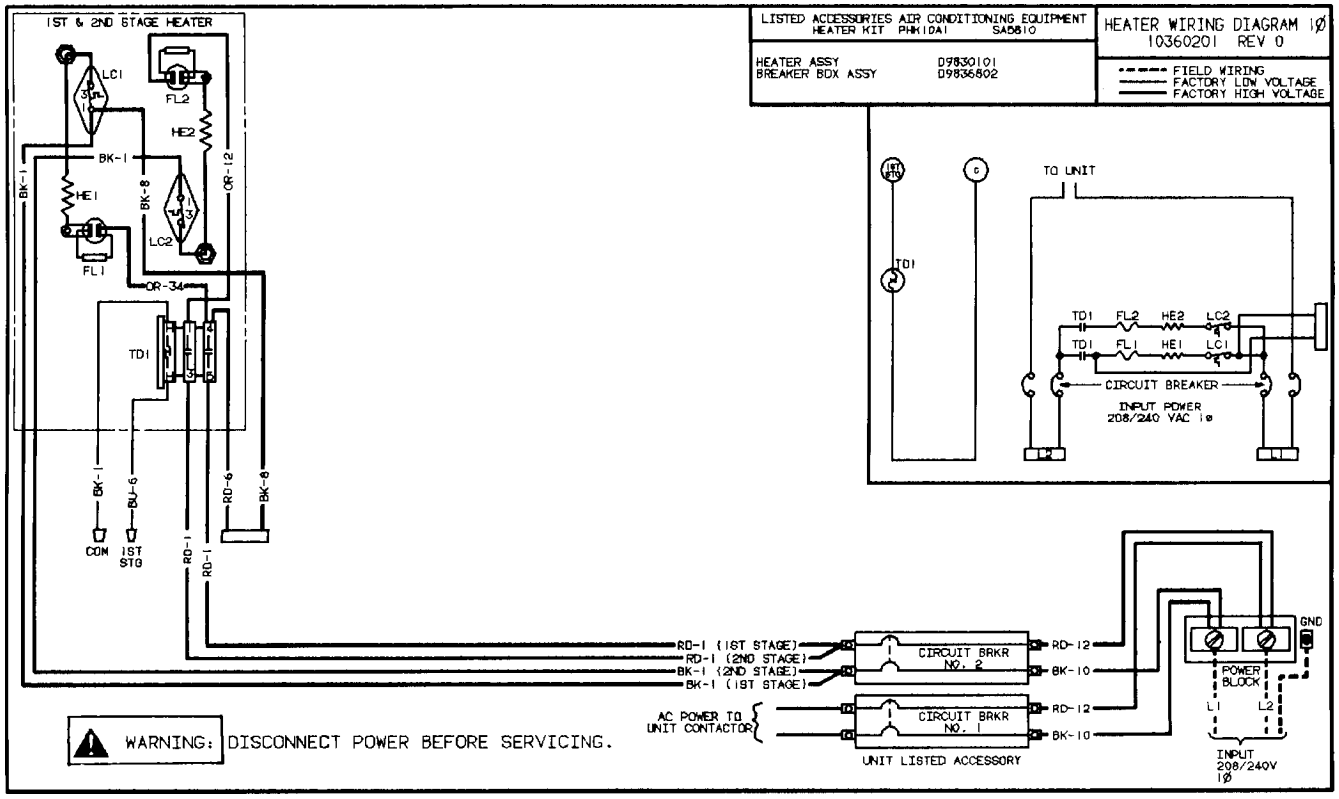


4.8 KW Single Phase (PHK05C1) or (PHK105C similar)

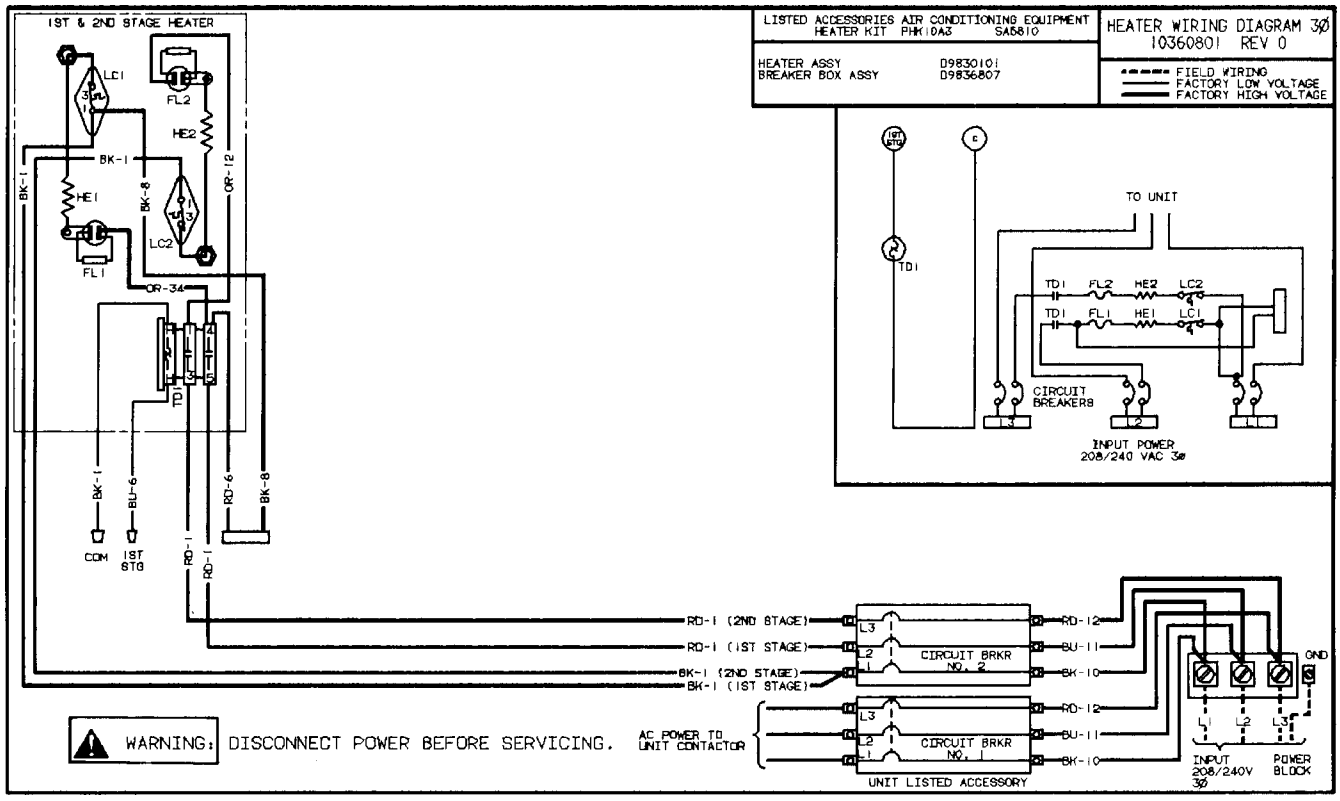
WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



9.6 KW Single Phase (PHK10A1) or (PHK110 similar)

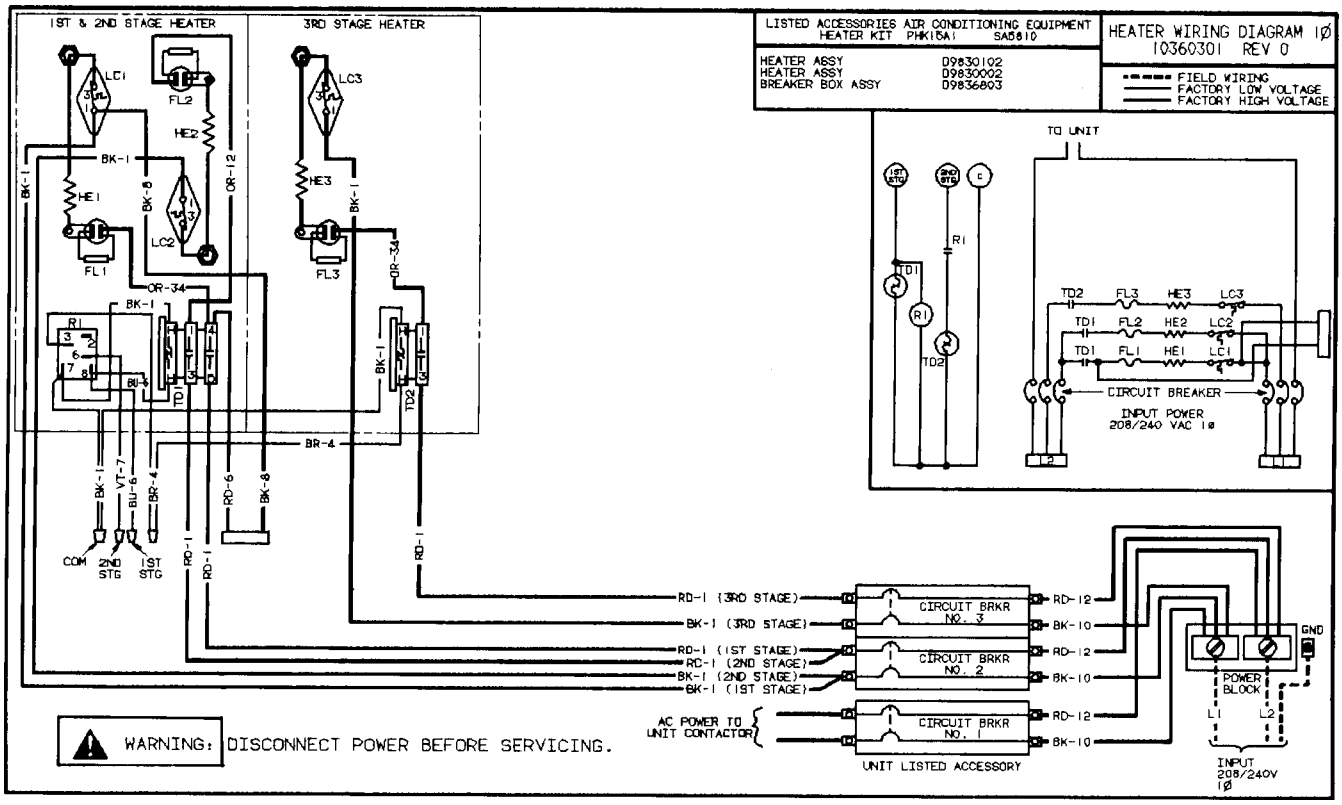


9.6 KW Single Phase (PHK05C1) or (PHK105C similar)

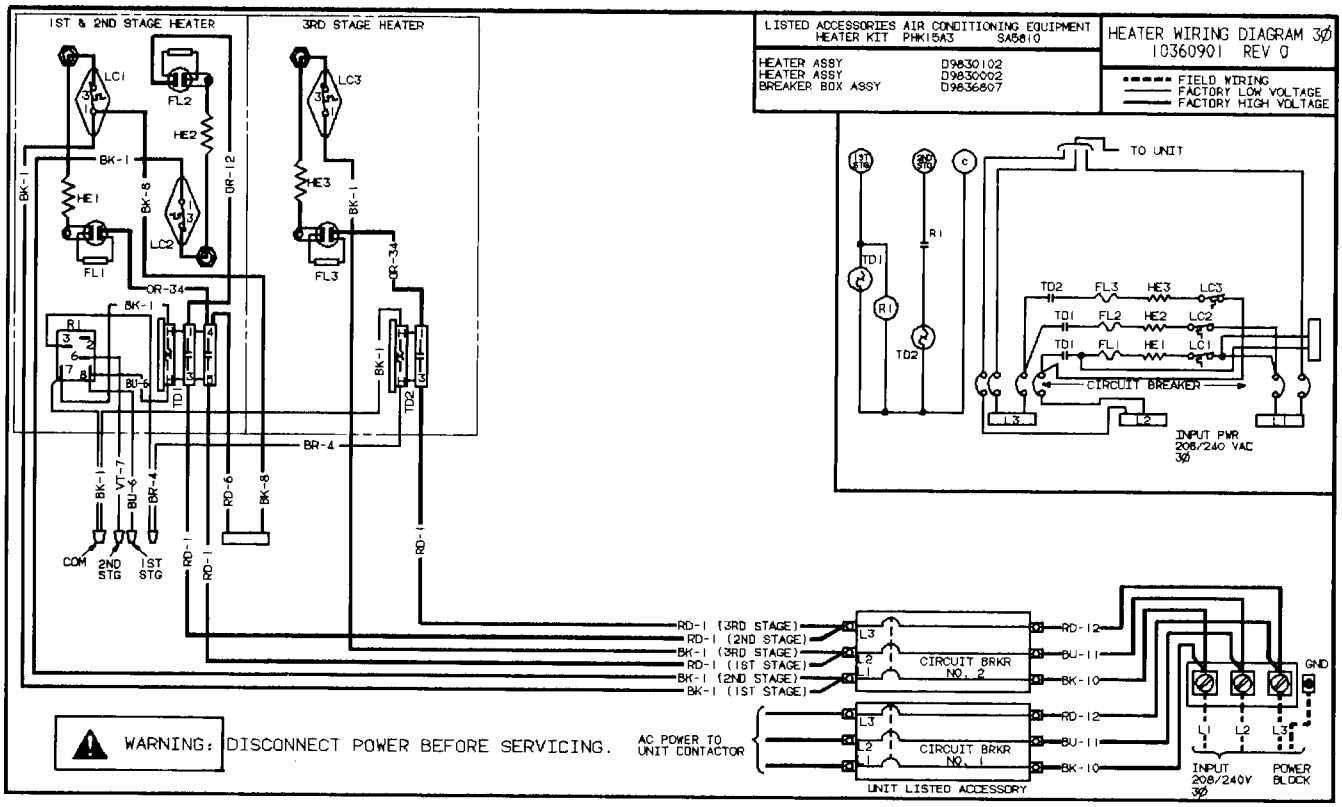
WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



14.4 KW Single Phase (PHK15A1) or (PHK115 similar)

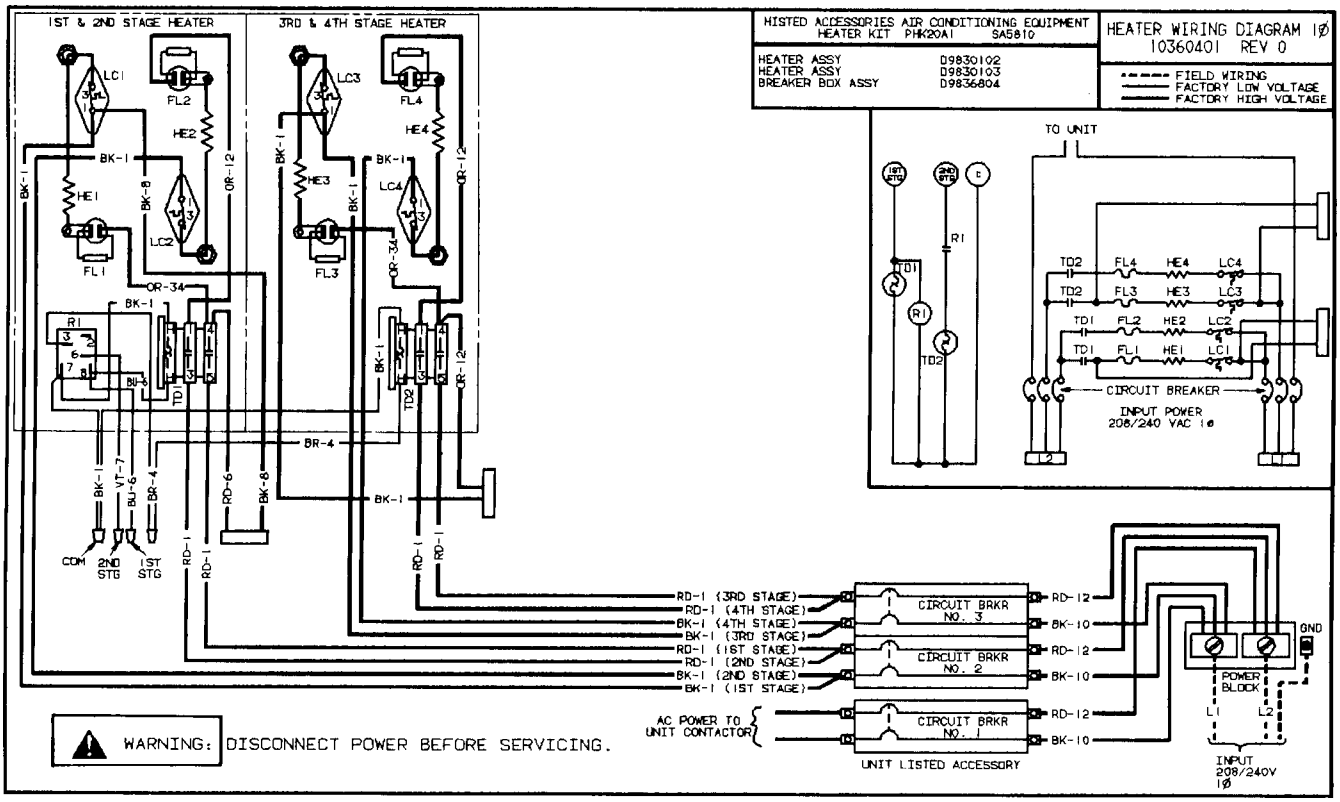


14.4 KW Three Phase (PHK15A3) or (PHK315 similar)

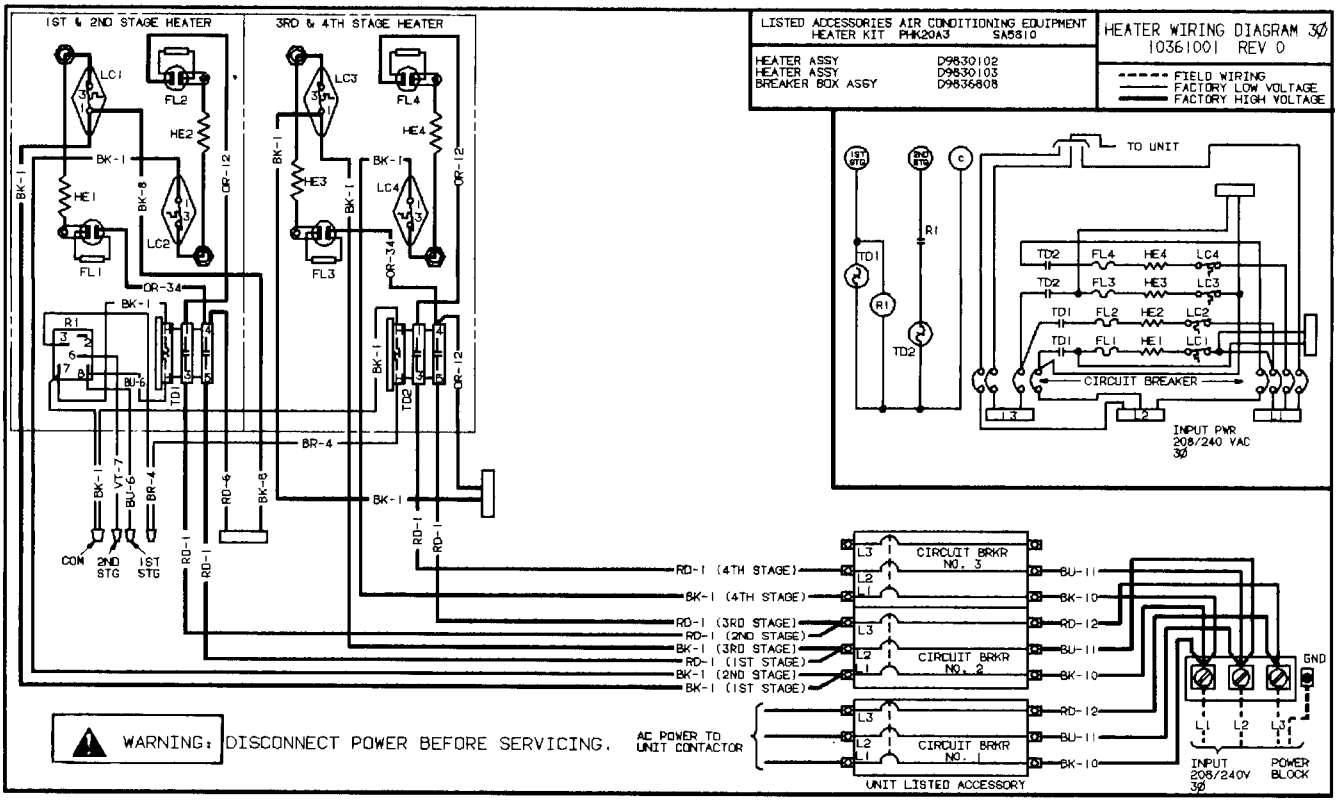
WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



19.2 KW Single Phase (PHK20A1) or (PHK120 similar)



19.2 KW Three Phase (PHK20A3) or (PHK320 similar)

WARNING

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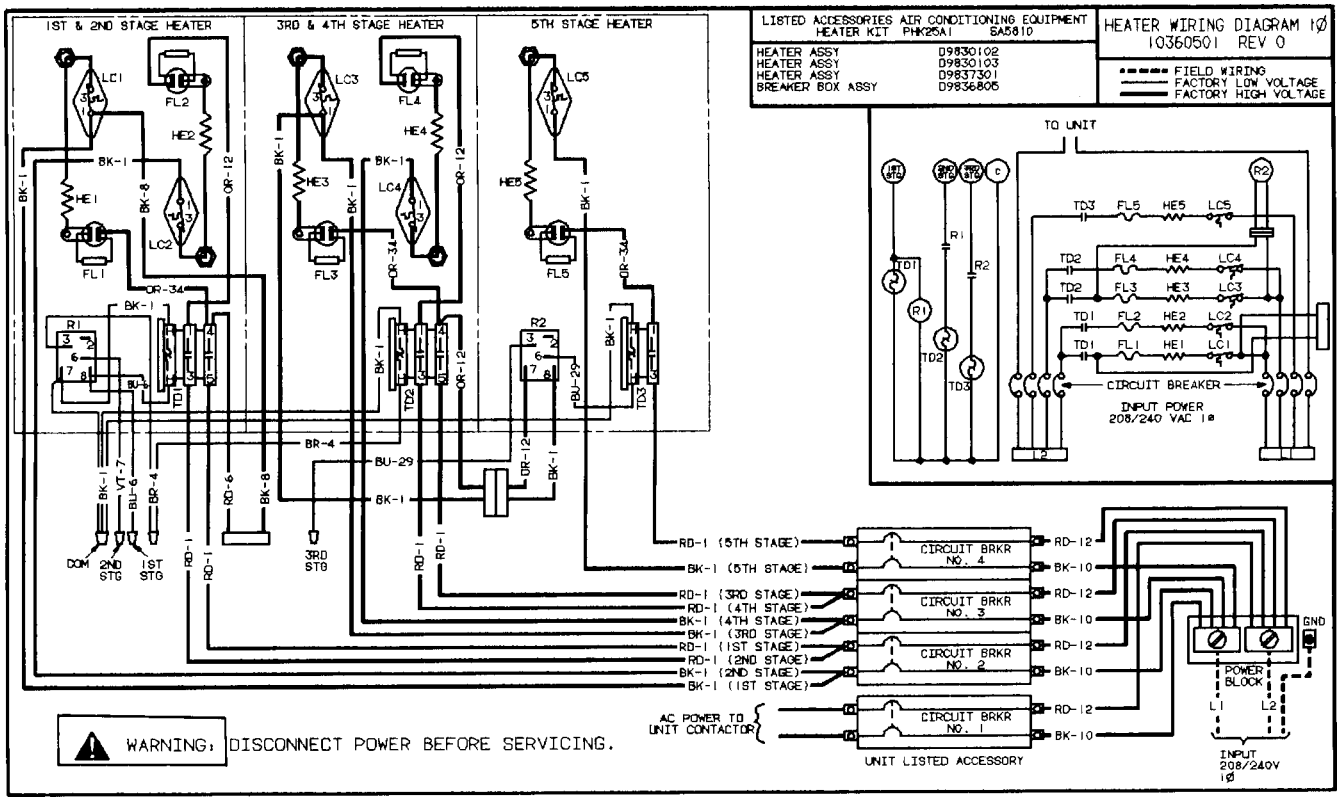
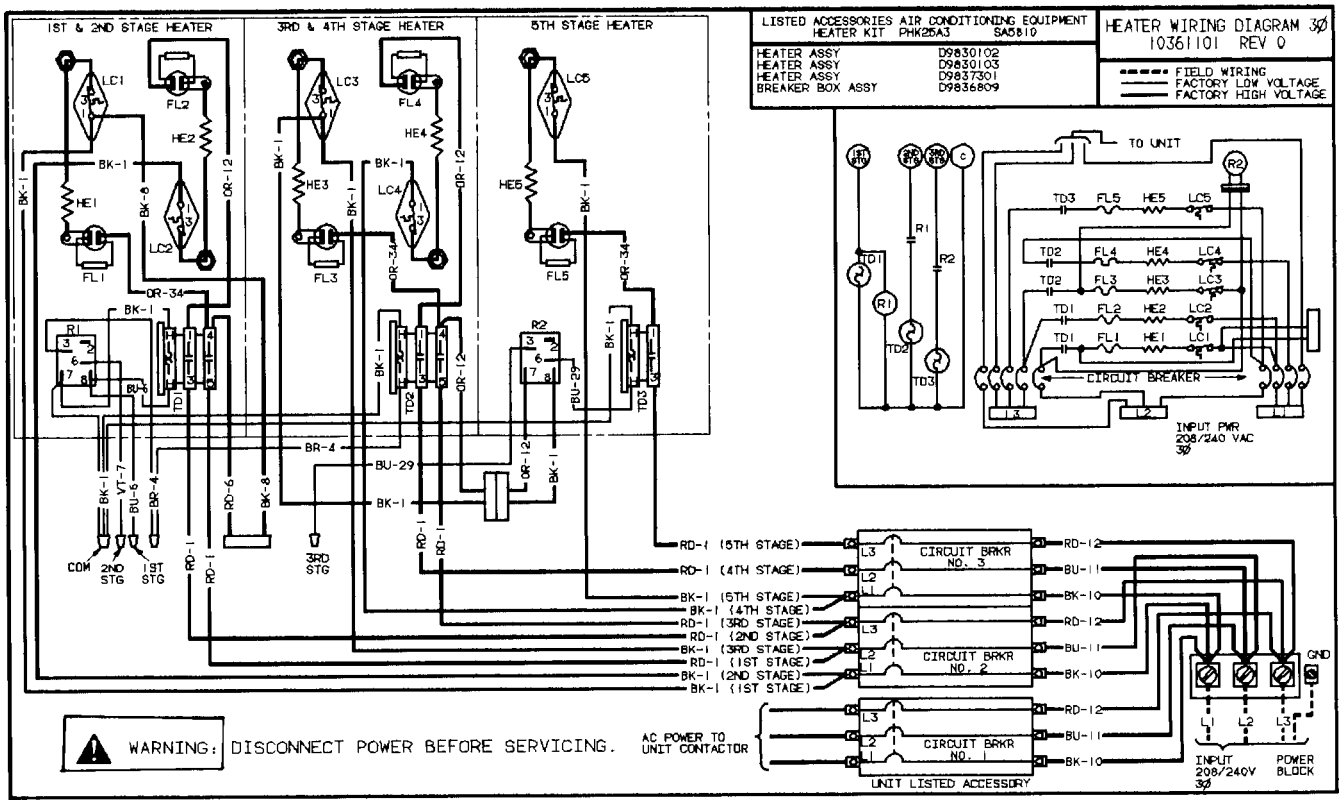
WIRING DIAGRAMS



24.0 KW Single Phase (PHK25A1) or (PHK125 similar)

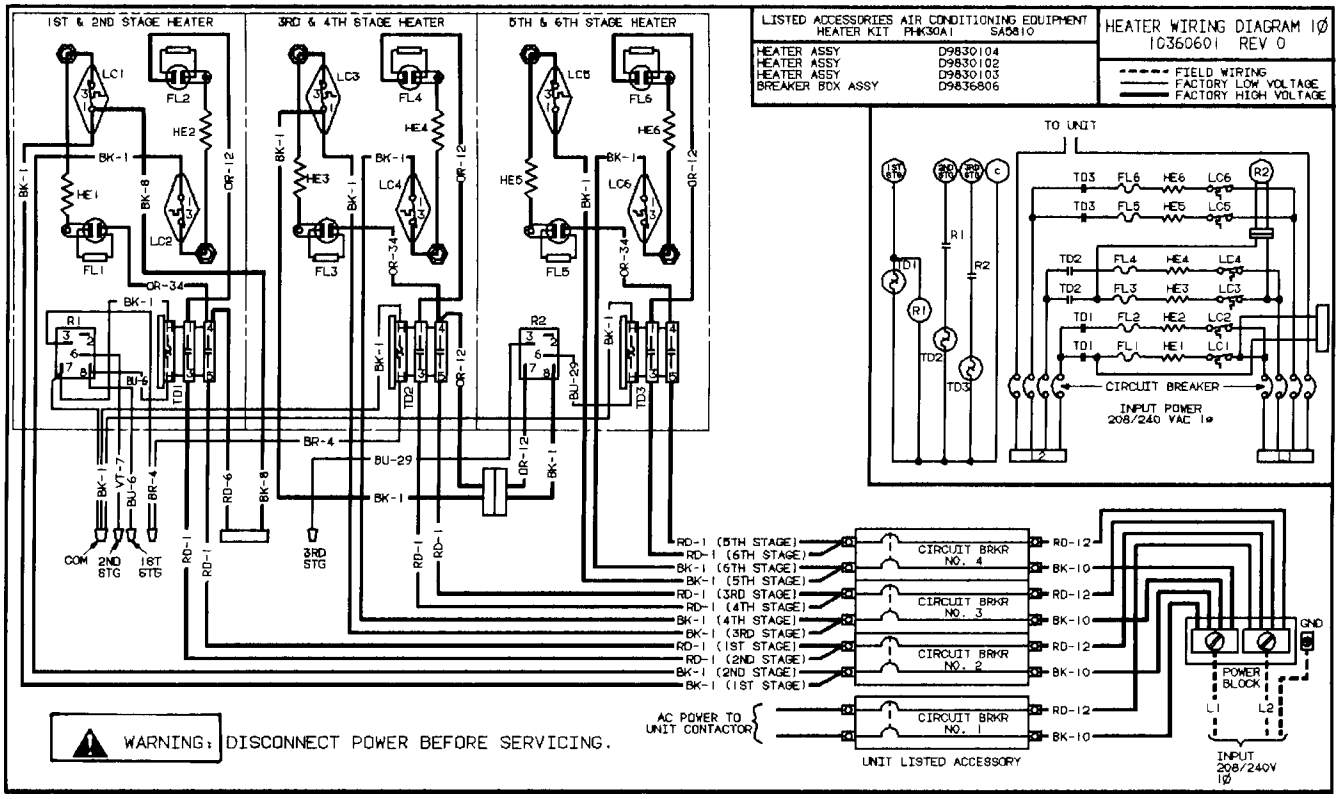


24.0 KW Three Phase (PHK25A3) or (PHK325 similar)

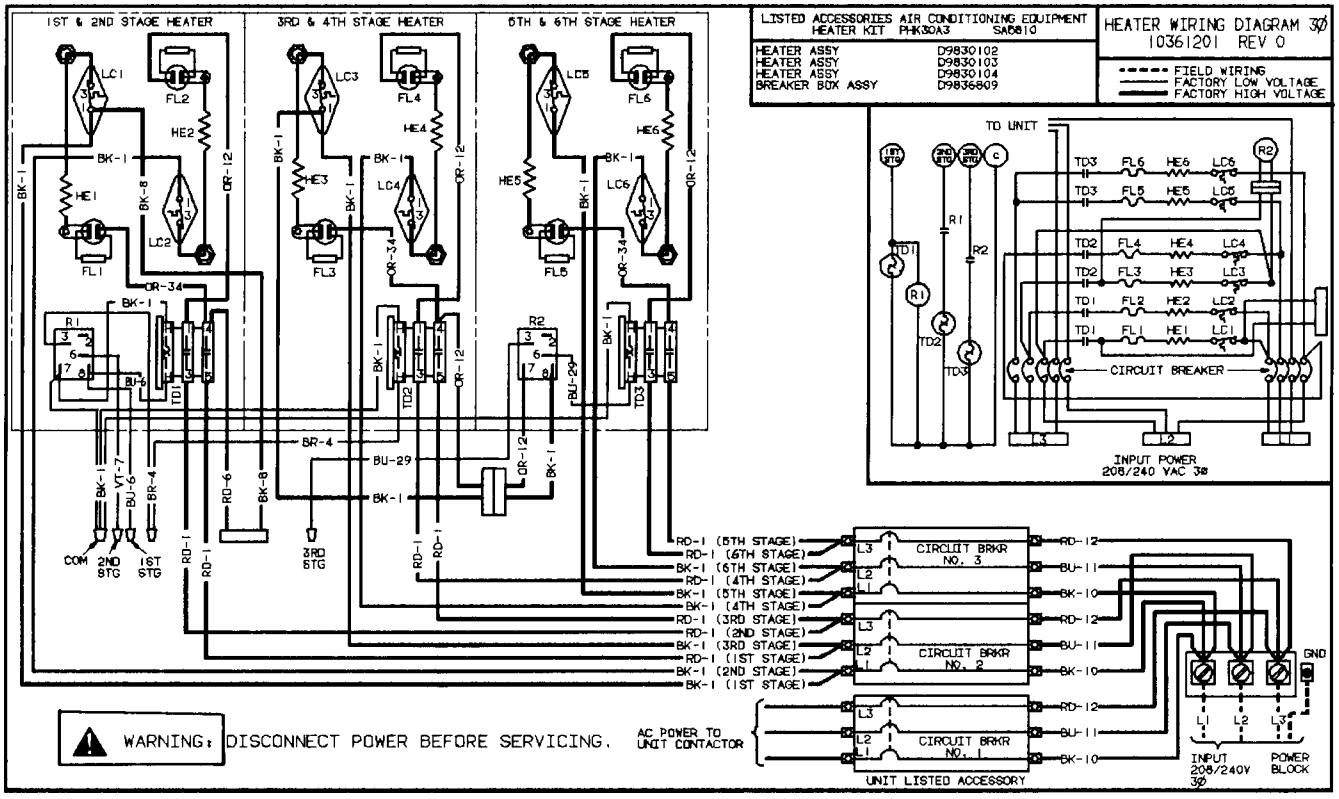
WARNING

TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WIRING DIAGRAMS



28.8 KW Single Phase (PHK30A1) or (PHK130 similar)

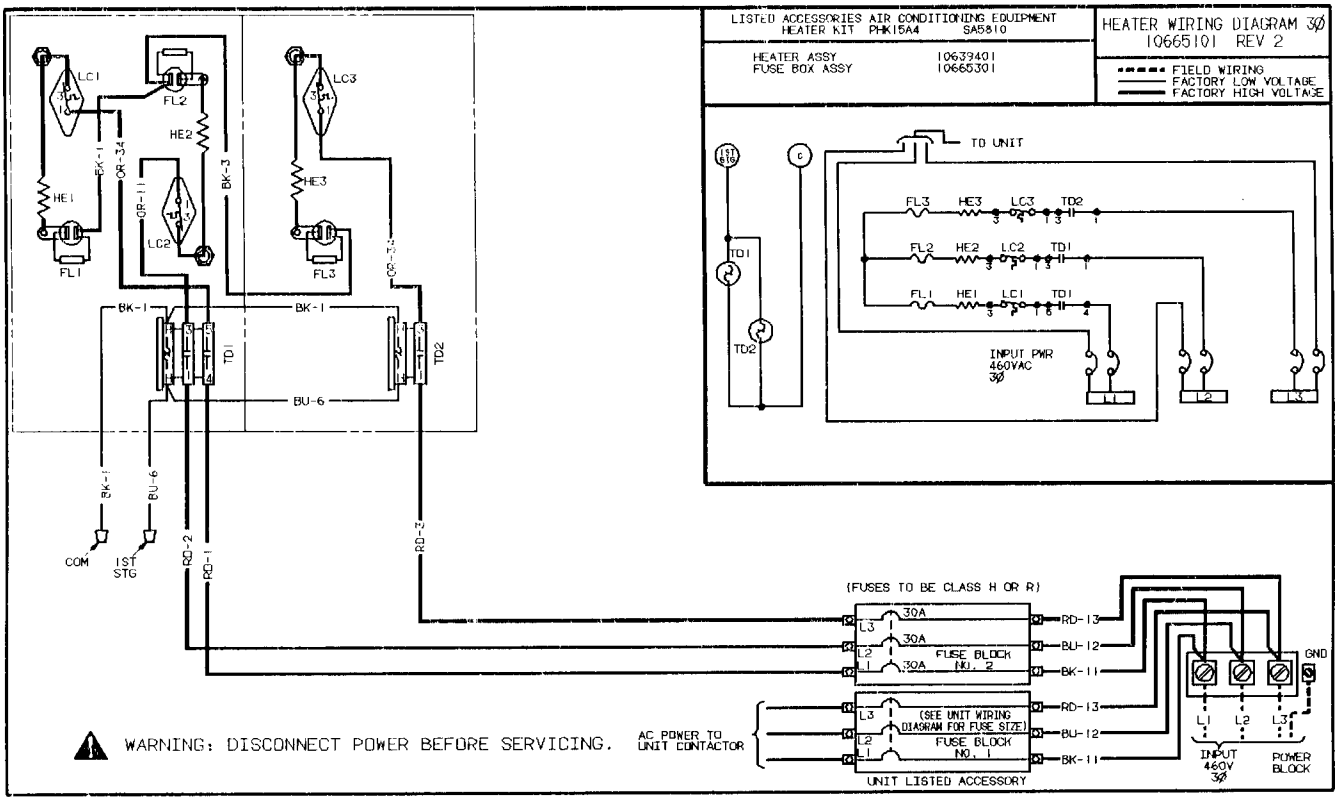


28.8 KW Three Phase (PHK30A3) or (PHK330 similar)

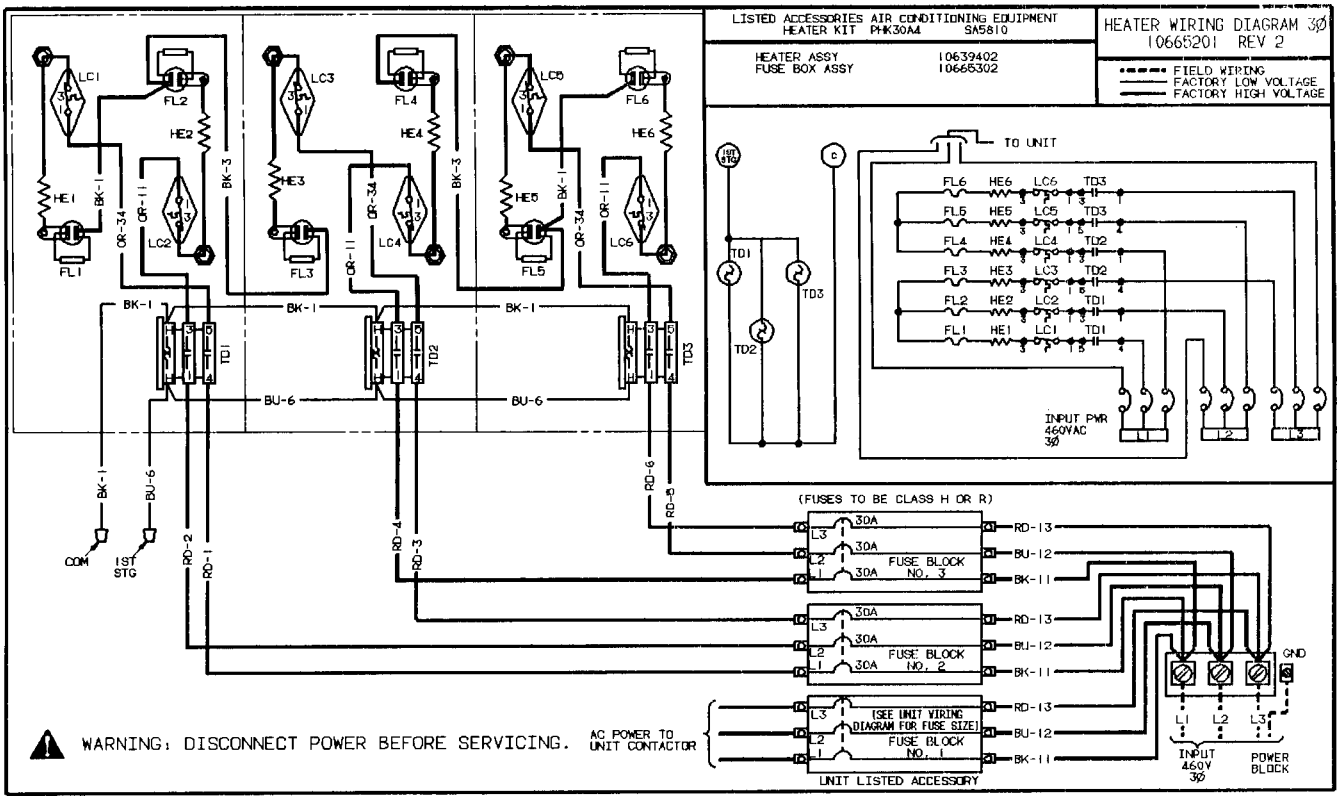
TO AVOID POSSIBLE ELECTRICAL SHOCK, PERSONAL INJURY, OR DEATH, DISCONNECT THE POWER BEFORE SERVICING.

WARNING

WIRING DIAGRAMS



14.4 KW Three Phase (PHK15A4)



28.8 KW Three Phase (PHK30A4)

WARNING

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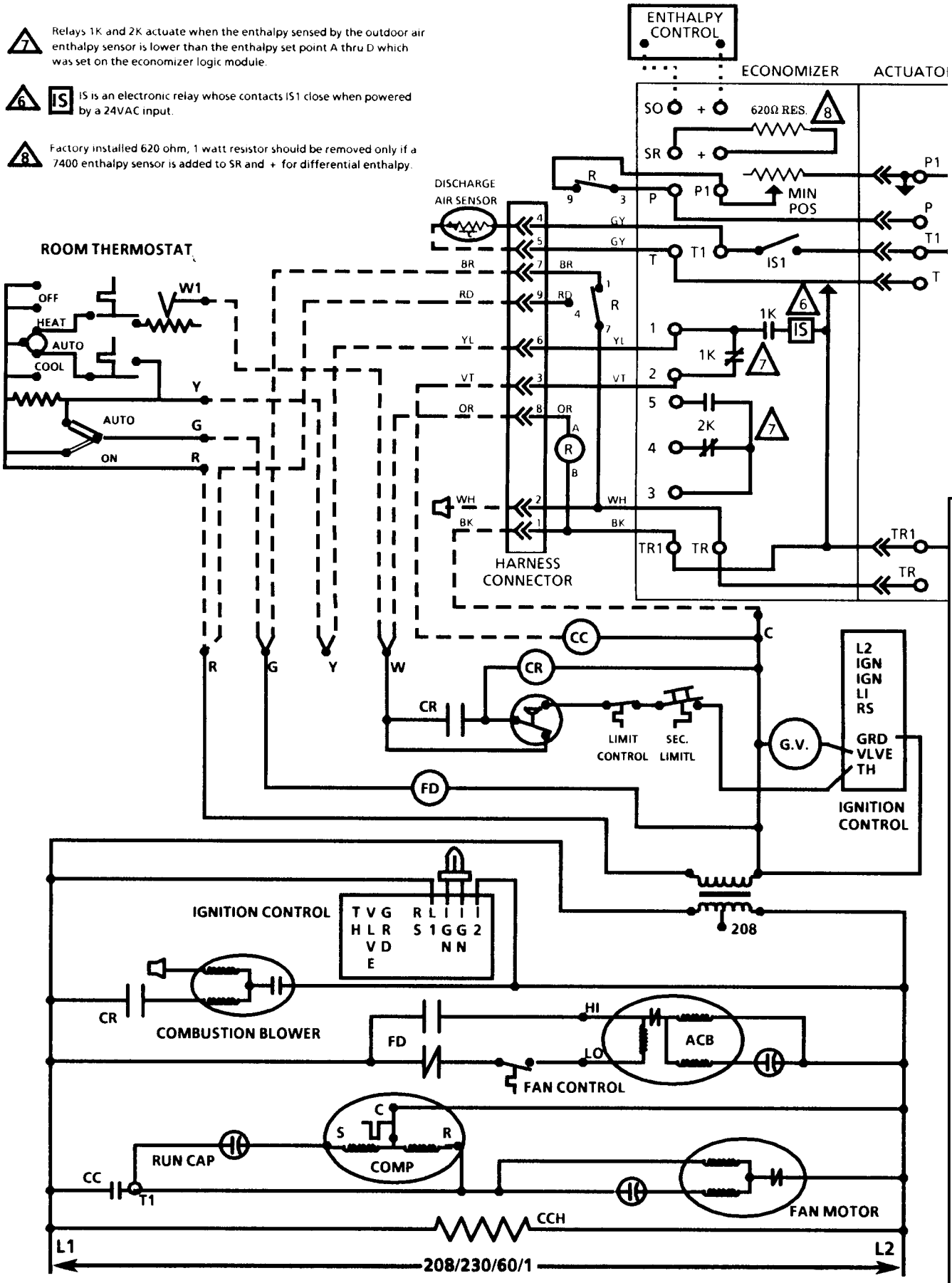
WIRING DIAGRAMS



TYPICAL SCHEMATIC - SPCG / PGA PACKAGE UNIT with ECONOMIZER